

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

Q521
R44A7



United States
Department of
Agriculture

Agricultural
Research
Service

ARS-148

October 1998

National Potato Germplasm Evaluation and Enhancement Report, 1997

Sixty-Eighth Annual Report
by Cooperators

USDA LIBRARY
1999 MAY -8 P 3:42
NATIONAL
ARCHIVE

United States
Department of
Agriculture

Agricultural
Research
Service

ARS-148

October 1998

National Potato Germplasm Evaluation and Enhancement Report, 1997

Sixty-Eighth Annual Report
by Cooperators

Edited by Kathleen G. Haynes

Vegetable Laboratory
Beltsville Agricultural Research Center
Agricultural Research Service
U.S. Department of Agriculture
Beltsville, MD 20705

Haynes, Kathleen G., ed. 1998. National Potato Germplasm Evaluation and Enhancement Report, 1997: Sixty-Eighth Annual Report by Cooperators. U.S. Department of Agriculture, Agricultural Research Service, ARS-148, 380 pp.

This progress report includes research results that have not yet been peer reviewed. The findings, when adequately confirmed, will be released through other appropriate channels.

This report is reproduced essentially as supplied by the authors. It received minimal publications editing and design. The author's views are their own and do not necessarily reflect those of the U.S. Department of Agriculture.

Mention of trade names in this publication is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the U.S. Department of Agriculture over others not mentioned.

This publication reports research involving pesticides. It does not contain recommendations for their use nor does it imply that uses discussed here have been registered. All uses of pesticides must be registered by appropriate State or Federal agencies or both before they can be recommended.

While supplies last, single copies of this publication may be obtained at no cost from Kathleen G. Haynes, Vegetable Laboratory, Building 011, Greenhouse 13, BARC-West, Beltsville, MD 20705.

Copies of this publication may be purchased from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161; telephone (703) 605-6000.

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5694 (voice and TDD). USDA is an equal opportunity provider and employer.

Contents

United States Department of Agriculture, Beltsville, MD and Presque Isle, ME	1	Nebraska	185
K.G. Haynes, K.O. DeLong, D. Fleck, M. Bragg, B. Adams, and C. Lagasse		A.D. Pavlista	
United States Department of Agriculture, Madison, WI	26	New Jersey	191
R.E. Hannemann, Jr., A.J. Hamernik, M. Ramon, and J.C. Kuhl		M.R. Henninger	
North Central Regional Potato Trials	46	New York, Breeding	225
R. Novy, B. Farnsworth, and Cooperators		R.L. Plaisted, B.B. Brodie, D.E. Halseth, S.A. Slack, W.M. Tingey, and K.D. Paddock	
Northeast Regional Potato Trials	58	New York, Long Island	228
J.A. Sisson III and Cooperators		J.B. Sieczka, D.M. Gergela, R.C. Neese, M.L. Masierowska, and D.D. Moyer	
Western Regional Potato Variety Trial	72	New York, Upstate	243
J.J. Pavek, D.L. Corsini, and Cooperators		D.E. Halseth, W.L. Hymes, R.W. Porter, and R.L. MacLaury	
California	80	North Carolina	269
R. Voss, H. Phillips, J. Nunez, D. Kirby, F. Laemmlen, R. Mullen, R. Smith, J. Valencia, and M. Jimenez		G.C. Yencho and W. Hines	
Colorado	87	North Dakota	295
D.G. Holm and J.D. Wick		R. Novy, B. Farnsworth, M. Schwalbe, N. Balbyshev, N. Gudmestad, E. Holm, J. Lorenzen, R. Lund, P. Orr, D. Preston, G. Secor, J. Sowokinos, and B. Brummond	
Idaho	96	Ohio	309
S. Love, J. Pavek, D. Corsini, P. Bain, M. Ruby, J. Stimpson, D. Inglis, and M. Powelson		R. Hassell, D.M. Kelly, E.C. Wittmeyer, and J. Elliott	
Maine	115	Oregon	321
G.A. Porter, J.A. Sisson, B. Bradbury, B. MacFarlane, and P. Wardwell		A. Mosley, D. Hane, S. James, K. Rykbost, C. Shock, B. Charlton, and E. Eldredge	
Maine, Breeding	136	Pennsylvania	338
A.F. Reeves, G.S. Grounds, and N. Huston		B.J. Christ, M.W. Peck, and D.M. Petrunak	
Michigan	140	Texas	342
D.S. Douches, R.W. Chase, K. Jastrzebski, R. Hammerschmidt, W. Kirk, C. Long, K. Walters, and J. Coombs		J.C. Miller, Jr., D.C. Scheuring, and J.W. Koym	
Minnesota	163	Virginia	351
C.A. Thill, R.L. Wenkel, D.K. Wildung, V.A. Fritz, N.A. Anderson, R.K. Jones, D.W. Ragsdale, E.B. Radcliffe, and C.A. Longtine		S.B. Sterrett and C.P. Savage, Jr.	
		Wisconsin	362
		H. Groza, B. Bowen, and J. Jiang	

United States Department of Agriculture,
Beltsville Agricultural Research Center,
Beltsville, Maryland, and Presque Isle,
Maine

K.G. Haynes, K.O. DeLong, D. Fleck, M.
Bragg, B. Adams, and C. Lagasse

Objectives: The USDA potato breeding program at Beltsville has four main objectives: (1) to develop improved pest-resistant germplasm and varieties; (2) to develop improved germplasm and varieties for processing directly out of cold storage; (3) to enhance germplasm for specific characteristics relating to pest resistance, yield, environmental stress, human nutrition and consumer acceptance; and, (4) to develop statistical genetic models for some of the new breeding strategies.

Breeding: Hybridizations in the greenhouse at BARC in early 1997 were made among tetraploid *S. tuberosum* selections and varieties possessing processing ability or fresh market potential, and late blight, soft rot, or scab resistance; between tetraploid *S. tuberosum* and tetraploid wild-species hybrids for cold temperature chipping ability; between tetraploid *S. tuberosum* and diploid *S. phureja*-*S. stenotomum* hybrids with high specific gravity; between *S. phureja*-*S. stenotomum* hybrids and haploid-species hybrids for high specific gravity and processing ability; and, among *S. phureja*-*S. stenotomum* selections for late blight resistance. In all, 560 tetraploid, 23 tetraploid x diploid, and 197 diploid crosses were successful.

Processing Evaluations: Yield trials for round whites (Tables 1-4), russets (Table 5), and specialty market types (Table 6) were conducted at Echo Lake. These were

planted in a randomized complete block design with four replications of 25 hills on May 28-29, 1997. Plants were spaced 9 inches within the row for all trials except the russet trial, in which plants were spaced 12 inches within the row. After harvest, September 16-19, tubers from each plot were graded, specific gravity was determined by the weight in air and weight in water method, and the ten largest tubers from each plot were cut to determine the presence of hollow heart. Tuber samples were stored at 40°F, 45°F, and 50°F. Tubers were processed out of 40°F, 45°F, and 50°F, and following a three week reconditioning period of 70°F from 40°F storage during January and February for the round white and russet trials. Selections in the specialty market trial were processed out of 50°F on December 5, 1997. For each combination of storage temperature and processing date, five tubers per sample from each plot were processed (20 samples per clone).

Tuber samples from all yield trials except the russets were processed into potato chips by taking 1/16-inch slices from the cross section of each tuber. Slices were rinsed in water and placed on paper towels to remove excess moisture. Chips were then fried at 340°F in Primex vegetable shortening until bubbling ceased.

Among the most advanced round, white-skinned selections in the program B0178-34, B0564-8, B0564-9, B0766-3, and B1240-1 show promise for the chipping industry, while B1065-61 (a 4x-2x hybrid) looks promising as a fresh market type (Table 1). Among the more recent round, white-skinned selections B1414-6, B1415-5, B1415-7, B1429A-3, B1440-10, B1440-18, B1445-7, B1449-1, B1338-27, B1452-23, and B1477-5 all processed well in January out of the two warmer storage temperatures,

however, with the exception of B1477-5, the yields of these selections were significantly less than that of Atlantic (Tables 2-4).

Tubers of B1463-12 were long and particularly attractive. This clone may have some fresh market potential.

Among the specialty market selections in the program, B0811-4 shows promise as a fairly high yielder of small, red skin, yellow flesh potatoes. Heavy skin netting continues to be a major concern in B0811-13. B1491-17 is another red skin, yellow flesh selection with a fairly good yield of attractive tubers (Table 6).

Tuber samples from the russet yield trial were processed into french fries. A 3/8-inch diameter plug was cut from the cross section of each tuber, rinsed, dried, and fried at 365°F for five minutes.

Among the russet selections in the program B9922-11 still shows a lot of promise for either fresh market or processing. Tubers of B1004-8 and B1482-6 were attractive, but yields were very low (Table 5).

This year 75 varieties maintained in our variety collection were evaluated in yield trials with the standard varieties Atlantic and Superior (Tables 7-9) following the procedures used in the specialty market yield trials, with the exception that the last trial was planted on Aroostook Farm instead of Echo Lake. The yield, specific gravity, and chip color out of 50°F storage in December for Grand Falls and Trent were as good as Atlantic. Hollow heart was a severe problem in Red Kote.

The following selections are established in tissue culture and available for distribution to state certification agencies upon written

request to K.G. Haynes: B9922-11, B0178-34, B0564-8, and B0564-9.

BARC Table 1. Yield, tuber size distribution, and quality characteristics of round whites harvested 116 days after planting at Echo Lake in 1997.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ²	HH ³
				<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	97	361	95	3.3	19.0	58.7	17.8	1.2	77	2
B0178-34	96	320	94	6.1	28.7	52.8	12.4	0.0	77	10
B0564-8	100	284	90	8.3	29.8	53.8	6.7	1.5	75	0
B0564-9	100	358	95	4.3	20.4	50.8	23.7	0.7	75	0
B0766-3	94	263	92	6.6	24.3	53.4	14.5	1.3	70	1
B1065-51	95	259	95	4.3	15.9	57.5	21.6	0.7	68	0
B1066-51	97	315	90	9.8	35.3	53.4	1.6	0.0	75	0
B1066-73	97	334	91	9.4	26.6	58.2	5.8	0.0	72	4
B1070-88	94	272	82	17.5	54.2	28.3	0.0	0.0	79	1
B1072-21	93	312	97	2.9	18.0	68.1	11.0	0.0	63	0
B1083-51	98	271	94	6.2	34.6	56.5	2.7	0.0	76	0
B1088-37	96	340	89	4.6	16.8	45.6	27.0	6.0	65	7
B1110-11	97	246	86	13.9	37.9	44.6	3.5	0.0	75	2
B1206-10	94	252	91	4.8	23.8	53.3	14.4	3.7	68	2
B1214-7	97	364	91	2.9	10.2	47.2	34.2	5.6	65	0
B1240-1	94	337	93	7.2	30.0	56.0	6.8	0.0	72	0
Monona	97	225	90	9.9	43.4	45.0	1.7	0.0	64	0
Snowden	99	315	93	7.4	37.6	50.1	5.0	0.0	79	0
LSD (.05)		69							03	

¹ Stand count on June 30, 1997

² 1.0 omitted

³ Number of tubers with hollow heart out of 40

BARC Table 1. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹
Atlantic	2	5	9	7	8	9	9	9
B0178-34	3	6	9	9	7	9	9	9
B0564-8	2	5	9	7	7	9	9	9
B0564-9	2	5	9	7	7	9	9	9
B0766-3	2	5	9	7	7	9	9	9
B1065-51	2	7	9	7	7	9	9	9
B1066-51	3	7	5	7	5	9	9	9
B1066-73	2	5	7	5	8	9	9	9
B1070-88	4	7	7	7	7	9	9	9
B1072-21	2	5	9	9	7	9	9	5
B1083-51	2	5	9	9	7	9	9	9
B1088-37	2	5	9	7	7	9	9	3
B1110-11	2	5	9	7	7	9	9	9
B1206-10	3	5	7	5	8	9	7	9
B1214-7	2	5	7	7	5	9	9	7
B1240-1	2	7	9	9	7	9	9	9
Monona	3	7	9	8	8	9	9	9
Snowden	2	5	9	9	7	9	9	9

⁴ Tuber shape NE-184 rating scale

⁵ Eye depth “

⁶ Second growth “

⁷ Growth cracks “

⁸ Silver scurf “

⁹ Heat sprouts “

¹⁰ Greening “

¹¹ Scab “

BARC Table 1. Continued

Temperature Date	50°F		45°F		40°F		40°-70°F		50°F		45°F		40°F		40°-70°F	
	Chip ¹²	Spt ¹³	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt
Atlantic	2.6	S	2.9	S	5.0	O	3.6	L	2.8	VL	3.3	VL	5.0	S	3.1	L
B0178-34	1.0	S	1.0	S	3.8	O	2.6	S	1.8	VL	1.2	VL	4.0	S	2.5	M
B0564-8	1.6	S	1.7	S	4.4	O	3.5	M	2.1	VL	2.0	VL	4.3	S	3.1	VL
B0564-9	2.0	S	2.3	S	5.0	O	3.0	M	2.8	L	2.9	VL	4.8	S	3.0	L
B0766-3	1.1	M	1.0	M	4.2	O	1.8	L	1.9	VL	1.4	VL	4.0	S	2.5	VL
B1065-51	4.4	S	4.0	M	5.0	O	4.6	M	3.8	VL	4.1	VL	4.9	S	4.7	L
B1066-51	3.8	M	3.7	M	5.0	O	4.6	M	3.2	VL	4.0	VL	5.0	S	3.9	VL
B1066-73	3.4	M	3.5	S	5.0	O	4.3	S	3.7	VL	3.5	VL	5.0	S	4.4	M
B1070-88	3.8	VL	3.1	VL	5.0	O	4.8	VL	3.6	VL	3.7	VL	5.0	M	4.5	VL
B1072-21	2.7	S	3.0	O	5.0	O	4.0	S	2.7	M	2.3	L	5.0	O	3.9	S
B1083-51	2.5	S	2.4	S	5.0	O	3.8	S	2.8	S	2.2	S	5.0	O	3.7	M
B1088-37	4.0	S	4.3	M	4.9	O	4.8	M	4.0	VL	3.8	VL	5.0	S	4.4	L
B1110-11	1.8	S	2.5	M	4.8	O	3.2	M	2.7	VL	2.4	VL	4.7	S	3.1	M
B1206-10	2.7	L	2.5	VL	4.9	O	3.8	M	3.2	VL	3.1	VL	4.7	S	4.2	L
B1214-7	4.9	S	4.8	S	5.0	O	5.0	S	4.0	L	4.1	L	5.0	S	4.9	L
B1240-1	2.2	S	2.2	S	5.0	O	3.2	S	2.2	M	2.0	L	4.7	S	2.7	M
Monona	2.0	S	1.1	S	4.7	O	2.2	S	2.3	L	1.7	VL	4.1	S	2.7	M
Snowden	1.0	S	1.0	S	4.3	O	2.3	M	1.4	L	1.3	L	4.0	S	1.9	VL

¹² Chips 1-2 = satisfactory, 3 = marginal

¹³ Sprout O = no sprouts

S = <0.5"

M = 0.5" - 1.5"

L = 1.5" - 2.5"

VL = >2.5"

BARC Table 2. Yield, tuber size distribution, and quality characteristics of round whites harvested 113 days after planting at Echo Lake in 1997.

Pedigree	% Stand ¹	Mkt CWT/A	% Tuber Size Distribution					SG ²	HH ³
			<17/8"	17/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	100	359	91	17.6	55.9	17.9	5.1	78	6
B1240-14	100	291	92	27.9	54.9	9.5	0.0	82	4
B1248-5	100	256	86	44.0	41.3	1.2	0.0	71	0
B1321-21	98	272	90	25.5	53.7	10.6	3.1	69	8
B1414-6	99	286	95	4.5	64.6	16.8	0.0	72	1
B1415-5	100	206	86	13.9	39.3	2.4	0.0	78	0
B1415-7	92	240	94	5.8	69.2	12.9	0.0	71	4
Kennebec	97	310	92	3.9	60.7	17.0	3.7	64	3
Superior	99	265	94	6.5	51.1	3.9	0.0	74	0
LSD (.05)		48						5	

¹⁻¹³ See BARC Table 1

BARC Table 2. Continued.

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹
Atlantic	2	5	9	9	7	9	9	9
B1240-14	2	7	9	7	7	9	9	9
B1248-5	2	7	9	9	7	9	7	9
B1321-21	2	7	9	7	5	9	7	9
B1414-6	2	7	9	9	5	9	9	9
B1415-5	2	5	9	9	7	9	9	9
B1415-7	2	7	9	7	5	9	9	9
Kennebec	5	5	9	9	5	9	9	9
Superior	2	5	9	9	7	9	9	9

[illegible]

BARC Table 3. Yield, tuber size distribution, and quality characteristics of round white harvested 112 days after planting at Echo lake in 1997.

% Tuber Size Distribution										
Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"	SG ²	HH ³
Atlantic	100	355	94	3.9	22.8	54.8	16.0	2.6	80	4
B1429A-3	100	265	91	8.6	39.0	48.3	4.1	0.0	76	0
B1440-10	99	217	77	22.9	59.2	17.1	0.8	0.0	71	0
B1440-18	100	213	80	19.7	56.0	24.3	0.0	0.0	66	0
B1445-7	100	240	92	7.6	37.8	48.8	5.8	0.0	80	0
B1449-1	96	263	95	5.0	26.5	63.5	4.9	0.0	71	0
B1450-10	100	129	41	59.2	37.1	3.7	0.0	0.0	71	0
B1450-20	99	200	68	31.8	55.6	12.5	0.0	0.0	61	6
B1450-25	100	202	66	33.7	57.9	8.5	0.0	0.0	66	4
B1450-26	91	12	11	89.1	10.9	0.0	0.0	0.0	68	0
B1452-16	100	229	85	14.6	58.2	26.2	1.0	0.0	69	1
B1452-9	100	240	87	13.2	41.0	42.3	3.5	0.0	66	0
Coastal Chip	100	257	88	12.0	40.2	39.2	8.5	0.0	74	0
Irish Cobbler	100	216	85	15.2	49.4	32.1	3.3	0.0	70	1
LSD (.05)		60							5	

¹⁻¹³ See BARC Table 1

BARC Table 3. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹
Atlantic	2	3	9	9	7	9	9	9
B1429A-3	2	7	9	9	7	9	7	9
B1440-10	8	7	9	9	7	9	9	9
B1440-18	2	7	9	9	7	9	9	9
B1445-7	3	7	9	9	7	9	9	7
B1449-1	5	7	9	7	7	9	9	9
B1450-10	2	7	7	9	7	9	7	9
B1450-20	7	5	7	9	5	9	7	7
B1450-25	6	7	7	9	7	9	9	7
B1450-26	8	8	9	9	7	9	7	9
B1452-16	3	7	9	9	7	9	9	9
B1452-9	2	5	9	9	7	9	7	9
Coastal Chip	3	5	9	9	7	9	9	9
Irish Cobbler	2	3	9	9	7	9	9	9

BARC Table 4. Yield, tuber size distribution, and quality characteristics of round whites harvested 112 days after planting at Echo Lake in 1997.

Pedigree	% Stand ¹	Mkt CWT/A	% Tuber Size Distribution							SG ²	HH ³
			%Mkt	<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"			
Atlantic	100	317	94	5.2	29.1	53.7	11.1	0.9	81	1	
B1338-27	100	253	87	12.9	53.2	33.9	0.0	0.0	73	0	
B1452-18	97	344	92	7.8	27.8	58.1	6.3	0.0	66	0	
B1452-19	100	187	70	29.6	47.7	22.8	0.0	0.0	71	0	
B1452-20	98	265	95	5.2	23.4	66.3	5.1	0.0	60	2	
B1452-21	99	190	87	10.8	26.3	47.2	13.2	2.6	62	1	
B1452-23	99	246	85	15.0	50.9	33.4	0.7	0.0	62	0	
B1452-25	99	252	80	19.6	56.5	23.9	0.0	0.0	62	0	
B1463-12	100	279	87	12.8	53.1	34.1	0.0	0.0	68	0	
B1477-5	99	332	94	5.8	28.3	59.7	6.3	0.0	75	0	
B1478-8	100	303	93	6.5	22.9	63.5	7.1	0.0	71	0	
B1479-4	94	228	88	11.5	45.0	42.7	0.8	0.0	73	1	
Katahdin	99	303	93	7.0	36.4	55.1	1.5	0.0	66	0	
Oceania	100	262	89	11.5	36.6	45.2	6.7	0.0	63	1	
Ontario	100	347	92	8.5	34.5	47.8	9.2	0.0	58	1	
Suncrisp	100	313	91	9.5	40.6	47.5	2.5	0.0	84	0	
LSD (.05)		55							04		

¹⁻¹³ See BARC Table 1

BARC Table 4. Continued.

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹
Atlantic	2	5	7	9	7	9	9	9
B1338-27	2	7	7	9	5	9	9	9
B1452-18	3	5	7	9	7	9	9	9
B1452-19	2	5	7	9	7	9	9	9
B1452-20	3	5	9	9	7	9	9	9
B1452-21	2	5	7	9	5	9	9	9
B1452-23	6	5	7	9	5	9	9	9
B1452-25	3	5	7	9	7	9	9	9
B1463-12	8	7	9	9	7	9	9	9
B1477-5	3	5	7	9	7	9	9	9
B1478-8	3	7	9	9	5	9	9	9
B1479-4	2	7	9	9	7	9	7	9
Katahdin	2	5	7	9	5	9	9	9
Oceania	2	7	9	9	7	9	7	9
Ontario	3	3	7	9	5	9	9	9
Suncrisp	2	3	7	9	7	9	9	9

Temperature Date	50°F		45°F		40°F		40°-70°F		50°F		45°F		40°F		40°-70°F	
	Chip ¹²	Spt ¹³	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt
Pedigree																
Atlantic	2.9	S	2.4	S	4.9	O	2.9	M	2.5	VL	2.3	VL	4.6	S	3.2	L
B1338-27	1.6	S	2.0	O	4.9	O	3.2	M	2.3	L	1.7	VL	4.3	S	3.4	L
B1452-18	4.0	M	4.1	M	5.0	O	4.9	S	3.9	VL	4.3	VL	5.0	S	4.1	M
B1452-19	3.8	O	3.8	S	5.0	O	4.9	S	4.1	M	4.0	L	5.0	O	4.8	M
B1452-20	4.1	S	3.9	S	5.0	O	4.3	M	4.1	L	3.8	VL	5.0	S	4.3	M
B1452-21	3.0	S	3.1	O	5.0	O	5.0	S	3.5	S	3.1	S	5.0	S	4.0	M
B1452-23	2.0	S	2.5	S	5.0	O	3.4	M	2.4	VL	1.9	VL	4.8	S	2.9	L
B1452-25	4.0	S	4.4	S	5.0	O	5.0	S	4.0	VL	4.3	VL	5.0	S	4.8	L
B1463-12	3.3	M	3.4	S	5.0	O	4.5	L	3.7	VL	3.8	VL	5.0	O	4.1	VL
B1477-5	1.9	L	1.4	L	4.5	O	2.9	M	2.3	VL	2.4	VL	4.4	S	2.9	L
B1478-8	4.2	M	2.9	M	5.0	O	3.9	M	3.6	VL	4.1	VL	5.0	S	3.3	VL
B1479-4	3.2	M	2.9	L	4.9	O	3.9	S	3.6	VL	3.0	VL	4.7	S	3.3	M
Katahdin	4.0	M	3.6	M	5.0	O	3.9	S	3.5	VL	3.8	VL	5.0	O	3.6	M
Oceania	3.7	S	3.8	S	5.0	O	3.5	M	3.2	M	3.9	L	5.0	S	4.0	L
Ontario	3.5	M	3.4	M	5.0	O	4.8	M	3.6	VL	3.8	VL	5.0	S	4.8	L
Suncrisp	2.0	M	1.0	M	4.1	O	2.8	M	2.4	VL	1.7	VL	4.0	S	3.0	L

BARC Table 5. Yield, tuber size distribution, and quality characteristics of russets harvested 110 days after planting at Echo Lake in 1997.

Pedigree	% Stand ¹	Mkt		%Mkt	<2 oz	26 oz	6-10 oz	10-16 oz	SG ²	HH ³
		CWT/A	CWT							
B0835-11	100	252	252	94	6.3	34.0	59.8	0.0	69	2
B1004-8	98	225	225	90	10.4	50.5	39.1	0.0	73	0
B1409-2	100	313	313	95	5.4	35.3	57.6	1.7	79	0
B1450-12	99	172	172	65	35.5	50.0	14.6	0.0	67	9
B1452-10	100	211	211	84	15.6	53.1	30.7	0.6	73	0
B1452-27	100	208	208	81	19.1	53.0	27.9	0.0	61	0
B1452-3	99	223	223	83	17.3	44.9	36.8	1.1	65	0
B1463-1	100	253	253	93	6.5	37.6	50.5	5.4	71	0
B1466-12	95	215	215	95	5.3	28.7	65.4	0.7	69	0
B1469-14	94	190	190	81	18.7	61.5	19.4	0.4	74	0
B1469-2	97	227	227	92	7.9	55.7	35.0	1.4	77	0
B1482-10	100	185	185	94	5.8	32.5	56.4	5.4	66	0
B1482-6	99	216	216	93	6.7	32.9	60.4	0.0	71	2
B9922-11	100	311	311	96	3.9	13.0	65.6	17.5	74	4
Russet Burbank	99	219	219	79	20.8	54.1	23.8	1.4	66	0
Russette	100	271	271	94	6.3	38.2	55.0	0.1	81	0
LSD (.05)		39							03	

1-11,13 See BARC Table 1

BARC Table 5. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹
B0835-11	7	7	9	9	5	9	9	7
B1004-8	6	7	9	9	7	9	9	9
B1409-2	7	7	9	9	5	9	9	5
B1450-12	8	7	5	7	3	9	7	7
B1452-10	7	7	7	9	7	9	9	3
B1452-27	8	7	9	9	7	9	9	9
B1452-3	7	7	7	9	7	9	9	7
B1463-1	7	7	9	7	7	9	9	7
B1466-12	7	7	9	7	7	9	9	9
B1469-14	8	7	9	9	7	9	9	7
B1469-2	5	7	9	9	5	9	7	3
B1482-10	7	7	9	7	7	9	9	9
B1482-6	8	7	9	9	7	9	9	9
B9922-11	3	7	7	5	7	9	9	9
Russet Burbank	8	5	2	7	5	9	9	9
Russette	3	7	9	5	7	9	9	9

BARC Table 5. Continued.

Temperature Date	50°F		45°F		40°F		40°-70°F		50°F		45°F		40°F		40°-70°F	
	Fry ¹²	Spt ¹³	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt
B0835-11	3.2	O	2.9	O	4.3	O	4.2	S	3.0	S	3.1	S	4.5	O	4.6	S
B1004-8	2.8	S	2.6	S	5.0	S	3.4	S	2.3	S	2.4	M	4.5	S	2.6	M
B1409-2	1.6	S	1.7	S	4.3	O	3.9	S	1.5	M	1.5	S	3.9	O	3.0	M
B1450-12	3.2	M	3.2	M	5.0	S	4.1	M	3.0	L	3.1	L	4.6	S	4.1	M
B1452-10	1.5	M	1.0	M	3.8	O	3.4	S	1.0	VL	1.6	VL	3.3	O	3.0	M
B1452-27	2.1	S	2.5	S	5.0	O	4.5	S	2.8	M	2.3	L	4.6	O	4.7	M
B1452-3	2.0	S	2.0	S	4.1	S	3.5	S	2.5	M	1.3	L	3.5	O	3.6	M
B1463-1	2.3	M	1.9	M	4.4	S	3.8	M	2.7	VL	2.6	VL	3.7	S	3.6	L
B1466-12	3.7	S	3.7	S	4.9	O	4.9	M	3.6	M	3.4	L	4.5	O	4.8	M
B1469-14	3.0	M	2.1	M	4.6	S	3.0	M	2.8	VL	2.8	VL	3.9	S	3.3	L
B1469-2	1.9	S	2.1	S	4.0	O	3.0	M	2.3	M	1.9	VL	3.1	O	2.3	M
B1482-10	2.7	M	2.7	L	4.6	S	3.3	M	3.0	VL	2.7	VL	4.0	S	3.7	M
B1482-6	1.1	S	1.3	S	2.8	O	2.6	M	1.3	S	1.3	M	2.8	O	2.2	M
B9922-11	2.3	S	2.1	S	4.5	O	3.1	S	2.0	M	1.8	M	4.3	S	2.8	M
Russet Burbank	3.3	O	3.1	O	4.9	O	3.8	S	3.0	S	2.9	O	4.4	S	4.0	S
Russette	3.0	S	3.0	S	4.6	O	3.6	M	2.6	M	3.0	L	4.3	S	2.8	M

¹² Fry 1-3 = satisfactory

BARC Table 6. Yield, tuber size distribution, and quality characteristics of specialty types of potatoes harvested 113 days after planting at Echo Lake in 1997.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution						>4"	SG ²	HH ³
				<1 7/8"	1 7/8"-2 1/4"	2 1/4"-3 1/4"	3 1/4"-4"					
B0811-13	100	334	91	7.3	32.4	54.1	4.9			1.3	66	0
B0811-4	100	273	86	14.0	55.3	30.7	0.0			0.0	77	0
B0852-7	100	339	94	6.4	23.3	65.0	5.3			0.0	68	1
B0967-11	98	386	96	4.2	20.9	67.5	7.3			0.0	71	0
B0984-1	100	309	89	11.0	25.1	50.9	12.9			0.0	74	0
B0985-1	97	205	83	17.5	54.2	27.7	0.6			0.0	65	0
B1102-3	100	156	68	32.4	51.0	16.6	0.0			0.0	64	0
B1145-2	100	199	80	20.2	56.2	22.8	0.8			0.0	66	0
B1425-9	100	404	90	9.8	28.8	56.5	4.9			0.0	84	1
B1491-10	100	291	85	14.6	45.6	38.7	1.0			0.0	53	0
B1491-17	99	316	85	15.2	46.9	34.6	3.3			0.0	64	0
B1491-20	100	111	53	46.8	47.3	5.9	0.0			0.0	66	0
B1491-4	99	302	84	15.7	43.0	40.7	0.6			0.0	56	0
B1491-5	100	297	82	17.5	56.9	24.8	0.8			0.0	67	0
B1492-10	99	174	66	34.1	52.7	13.2	0.0			0.0	69	0
B1492-12	100	256	76	24.3	49.7	23.8	2.2			0.0	72	1
B1492-15	100	332	89	10.7	49.9	36.5	2.9			0.0	64	0
B1492-6	100	338	88	11.7	49.6	38.8	0.0			0.0	82	0
B1493-1	100	238	72	28.0	53.6	18.5	0.0			0.0	73	0
B1493-2	98	390	95	3.5	23.5	59.6	12.1			1.3	62	0
B1493-3	99	236	82	17.6	54.0	27.9	0.5			0.0	75	1
B1495-15	100	348	94	6.5	38.1	55.4	0.0			0.0	71	1
B1495-6	100	253	87	12.8	50.8	36.4	0.0			0.0	67	0
Reddale	98	343	92	3.7	8.5	47.4	35.7			4.7	59	4
Red LaSoda	99	382	94	5.7	21.8	61.6	10.9			0.0	61	2
Yukon Gold	99	342	96	3.8	18.7	61.5	16.0			0.0	78	0
LSD (.05)		53									04	

1-11.13 See BARC Table 1

BARC Table 6. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Chip ¹²	Spt ¹³	Comments
B0811-13	2	5	9	7	7	9	9	9	3.5	0	red skin, yf
B0811-4	2	3	9	9	7	9	9	9	2.6	0	red skin, yf
B0852-7	2	7	7	7	5	9	9	7	4.5	0	purple skin
B0967-11	3	7	7	9	5	9	9	9	3.8	0	purple skin
B0984-1	2	5	9	7	7	9	9	9	2.8	0	red skin
B0985-1	2	5	7	3	7	9	9	9	2.5	0	red skin
B1102-3	2	5	9	7	7	9	9	9	3.5	0	red skin
B1145-2	2	5	9	9	7	9	9	9	3.0	0	red skin
B1425-9	2	5	9	9	7	9	9	7	2.4	S	yf
B1491-10	2	7	7	3	7	9	9	9	4.0	0	red skin
B1491-17	2	5	9	9	7	9	9	9	3.9	0	red skin, yf
B1491-20	2	7	7	9	7	9	9	9	1.6	S	red skin
B1491-4	3	5	3	7	5	9	9	5	3.6	0	red skin, yf
B1491-5	2	5	9	7	7	9	9	9	4.1	0	red skin
B1492-10	2	5	9	9	7	9	9	9	3.0	0	red skin, yf
B1492-12	3	5	7	9	5	9	9	9	2.2	0	red skin
B1492-15	2	5	9	9	7	9	9	9	3.1	0	red skin, yf
B1492-6	2	5	9	9	5	9	9	9	2.4	0	red skin, yf
B1493-1	2	5	7	9	7	9	9	9	3.7	0	red skin
B1493-2	2	5	7	9	5	9	9	9	3.9	0	red skin, yf
B1493-3	2	5	9	7	7	9	9	9	2.3	0	red skin. yf
B1495-15	2	5	9	7	5	9	9	9	2.1	0	purple skin
B1495-6	3	5	9	7	7	9	9	9	3.2	0	red skin
Reddale	2	3	7	7	7	9	9	9	4.8	0	red skin
Red LaSoda	2	3	9	7	7	9	9	9	4.4	0	red skin
Yukon Gold	2	7	9	9	7	9	9	7	4.1	0	yf

¹² Chipped out of 50°F December 5, 1997: 1-2 = satisfactory, 3 = marginal

BARC Table 7. Yield, tuber size distribution, and quality characteristics of varieties harvested 112 days after planting at Echo Lake in 1997.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ²	HH ³
				<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Alamo	98	309	94	4.9	27.7	57.4	9.3	0.6	64	1
Anoka	97	317	95	4.9	22.3	65.0	7.8	0.0	69	1
Aracy	100	237	74	26.0	50.2	22.0	1.7	0.0	78	0
Atlantic	98	287	93	5.1	29.9	54.0	9.6	1.5	73	1
Belle Isle	99	258	89	11.3	37.4	48.0	3.4	0.0	62	0
Boone	98	322	94	4.7	19.9	56.2	18.4	0.9	63	0
Buckskin	100	321	90	9.6	39.2	45.7	5.6	0.0	72	1
Canoga	100	295	86	13.6	52.2	33.1	1.1	0.0	67	0
Caribe	100	318	95	4.6	22.2	63.0	10.2	0.0	67	1
Cariboo	100	239	81	18.7	46.0	31.8	3.4	0.0	79	0
Cascade	100	382	95	5.4	26.6	53.0	15.0	0.0	67	0
Climax	99	332	89	10.5	41.3	47.1	1.0	0.0	63	0
Dakchip	100	354	94	5.0	20.9	60.2	12.8	1.1	67	0
Dazoc	100	221	87	12.9	42.7	41.1	3.4	0.0	62	0
Desota	100	297	89	11.1	46.0	40.7	2.1	0.0	63	2
Eigenheimer	100	158	49	51.1	40.0	8.9	0.0	0.0	82	0
Emmet	99	291	93	6.8	31.3	57.1	4.8	0.0	71	1
Erie	100	232	87	12.6	44.7	42.0	0.7	0.0	63	0
Essex	100	435	95	5.2	24.7	64.8	5.4	0.0	63	1
Fundy	100	289	93	3.9	19.5	57.6	15.4	3.6	70	0
Golden	100	294	84	16.0	40.5	41.2	2.3	0.0	63	0
Grand Falls	96	300	94	4.9	19.3	66.3	8.8	0.7	74	1
High Plains	100	241	88	11.8	50.3	35.4	2.5	0.0	63	0
Haig	100	237	84	16.4	49.7	33.9	0.0	0.0	64	0
Highlat	99	190	87	12.9	44.3	41.2	1.6	0.0	64	0
Houma	100	289	90	10.4	45.0	44.6	0.0	0.0	66	0
Superior	100	279	95	5.0	36.8	49.8	8.4	0.0	72	0
LSD (.05)		63							02	

BARC Table 7. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Chip ¹²	Spt ¹³
Alamo	2	5	9	7	7	9	9	9	3.8	O
Anoka	2	5	9	7	7	9	9	9	3.8	O
Aracy	2	5	9	9	5	9	9	9	3.2	O
Alantic	2	5	9	9	7	9	9	9	2.4	O
Belle Isle	2	5	9	9	5	9	9	9	3.0	O
Boone	2	3	9	9	3	9	9	9	5.0	O
Buckskin	2	5	9	5	5	9	9	7	2.8	O
Canoga	2	3	9	9	5	9	9	7	4.3	S
Caribe	3	7	9	7	5	9	9	9	2.1	O
Cariboo	2	5	9	9	5	9	9	9	2.4	O
Cascade	3	7	9	9	5	9	9	9	4.7	O
Climax	2	5	3	9	7	9	9	9	5.0	S
Dakchip	2	5	9	9	5	9	9	9	2.2	S
Dazoc	2	3	9	9	7	9	9	9	2.8	O
Desota	2	3	7	9	5	9	9	9	4.2	O
Eigenheimer	2	5	2	9	7	9	9	9	3.5	S
Emmet	2	7	9	5	5	9	9	7	3.8	O
Erie	2	3	9	9	3	9	9	9	3.4	O
Essex	2	5	9	9	5	9	9	9	5.0	O
Fundy	2	5	9	5	7	9	9	9	3.7	O
Golden	2	3	9	9	5	9	9	9	4.1	L
Grand Falls	3	5	7	5	7	9	7	7	2.2	S
High Plains	2	7	7	9	3	9	9	9	2.8	O
Haig	2	5	9	9	7	9	9	9	2.5	S
Highlat	2	5	9	9	7	9	9	7	3.9	O
Houma	2	3	9	9	5	9	9	5	4.3	O
Superior	2	5	7	9	7	9	9	9	2.4	S

¹² Chipped out of 50°F December 11, 1997: 1-2 = satisfactory, 3 = marginal

BARC Table 8. Yield, tuber size distribution, and quality characteristics of varieties harvested 109 days after planting at Echo Lake in 1997.

Pedigree	% Stand ¹	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ²	HH ³
				<1 7/8"	1 7/8"-2 1/4"	2 1/4"-3 1/4"	3 1/4"-4"	>4"		
Atlantic	100	374	96	2.9	22.3	53.9	20.3	0.7	79	3
Huron	99	230	83	16.7	45.9	37.5	0.0	0.0	68	0
Iopride	100	271	94	6.0	32.9	55.0	6.1	0.0	67	0
Islander	99	277	92	7.8	37.8	51.8	2.6	0.0	74	0
Jemseg	92	236	93	4.4	21.4	50.2	21.6	2.3	70	2
Kasota	100	261	85	14.6	48.8	35.4	1.2	0.0	65	0
Keswick	97	288	97	2.3	14.4	48.1	34.2	0.9	71	1
LaSalle	100	305	91	9.1	30.9	49.7	10.3	0.0	66	0
LaSoda	98	368	94	5.6	23.0	59.5	11.8	0.0	67	1
Majestic	100	180	65	34.9	48.3	16.8	0.0	0.0	68	0
Maris Piper	98	228	73	27.1	57.9	14.5	0.5	0.0	76	0
Menominee	100	305	94	6.4	30.3	59.5	3.7	0.0	65	0
Mirton Pearl	97	316	93	5.8	24.3	56.5	11.9	1.5	76	0
Navajo	98	253	87	12.5	32.9	50.0	4.6	0.0	78	0
New Norchip	100	289	84	15.7	46.3	35.8	2.3	0.0	74	0
Norchief	100	291	88	12.0	44.0	41.6	2.3	0.0	66	0
Nordak	100	221	88	11.8	49.7	38.1	0.4	0.0	70	0
Norgleam	98	236	94	6.3	20.1	56.8	16.8	0.0	69	0
Norking	87	209	90	10.0	40.0	50.0	0.0	0.0	75	0
Ona	95	221	90	9.9	37.0	47.8	5.3	0.0	69	0
Onaway	100	309	93	2.1	17.9	49.9	24.8	5.2	67	0
Osseo	88	217	94	4.1	11.1	51.5	31.0	2.3	66	1
Pawnee	100	213	88	12.0	39.3	48.6	0.0	0.0	69	0
Pennchief	100	348	93	6.7	35.2	50.9	7.2	0.0	67	7
Penn 71	99	348	97	3.3	14.0	65.7	17.0	0.0	68	0
Pioneer	96	308	93	6.8	31.6	57.9	3.7	0.0	73	0
Superior	100	296	95	4.3	26.2	62.9	6.2	0.4	73	0
LSD (.05)		58							4	

BARC Table 8. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Chip ¹²	Spt ¹³
Atlantic	2	5	9	9	7	9	9	9	1.6	0
Huron	2	5	9	9	7	9	9	9	4.5	0
Iopride	2	7	9	9	7	9	9	9	3.5	0
Islander	2	7	7	7	7	9	9	9	1.1	0
Jemseg	2	7	7	7	7	9	9	7	3.3	0
Kasota	2	3	9	9	5	9	9	9	4.2	0
Keswick	3	5	9	9	5	9	9	7	4.6	0
LaSalle	2	5	9	7	3	9	9	9	4.2	0
LaSoda	2	3	9	9	5	9	9	9	4.4	0
Majestic	8	5	3	7	5	9	9	7	4.0	0
Maris Piper	2	5	7	9	7	9	9	7	2.7	0
Menominee	2	5	9	9	5	9	9	7	4.1	0
Mirton Pearl	3	3	7	9	5	9	9	7	3.9	0
Navajo	2	5	7	7	5	9	9	9	3.5	0
New Norchip	2	5	9	9	7	9	9	9	1.0	0
Norchief	2	5	9	9	3	9	9	9	4.6	0
Nordak	3	7	9	9	7	9	9	5	3.3	S
Norgleam	2	7	9	9	5	9	9	9	2.2	0
Norking	3	7	9	9	5	9	9	9	2.7	0
Ona	2	5	7	9	7	9	9	9	4.0	0
Onaway	2	3	9	7	5	9	9	9	4.8	0
Osseo	2	3	9	5	5	9	9	5	3.5	0
Pawnee	2	5	9	9	7	9	9	9	3.8	0
Penchief	2	5	9	9	5	9	9	9	2.1	0
Penn 71	2	5	7	9	5	9	9	7	2.0	0
Pioneer	7	7	7	9	7	9	9	9	3.6	0
Superior	2	5	9	7	7	9	9	9	2.2	0

¹² Chipped out of 50°F December 5, 1997: 1-2 = satisfactory, 3 = marginal

BARC Table 9. Yield, tuber size distribution, and quality characteristics of varieties harvested 105 days after planting on Aroostook Farm in 1997.

Pedigree	% Stand ¹	Mkt CWT/A	% Tuber Size Distribution					SG ²	HH ³
			<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	94	315	95	4.0	23.0	63.5	8.9	0.6	77
Purple Norland	94	281	96	3.7	22.7	66.5	7.1	0.0	62
Platte	77	222	93	5.4	28.2	63.1	2.1	1.2	60
Plymouth	90	266	95	4.9	28.4	62.2	4.4	0.0	68
Potomac	91	362	95	4.0	11.8	49.3	33.5	1.3	61
Raritan	86	226	94	6.0	24.8	64.0	5.2	0.0	81
Record	92	254	78	22.4	50.5	27.1	0.0	0.0	81
Red Burt	83	318	96	4.0	20.2	59.7	16.2	0.0	65
Red Glo	91	263	89	11.4	42.7	37.9	8.0	0.0	66
Red Kote	97	222	91	8.5	39.5	48.6	3.3	0.0	66
Red Warba	81	260	94	5.9	25.8	62.9	5.4	0.0	69
Redskin	98	336	95	2.4	8.3	55.8	30.8	2.8	61
Reliance	90	361	95	5.0	19.1	56.9	19.0	0.0	64
Rural New Yorker	63	214	96	4.3	22.1	61.5	12.1	0.0	68
Rushmore	35	260	94	5.7	25.2	67.7	1.3	0.0	65
Sable	68	254	97	3.1	15.1	65.8	15.9	0.0	63
Satapa	91	299	95	3.8	22.2	66.1	7.2	0.7	64
Saturna	98	209	74	26.2	61.5	12.3	0.0	0.0	82
Shurchip	87	273	94	5.7	31.5	59.7	3.1	0.0	64
Snowflake	79	258	93	6.8	25.5	61.8	5.9	0.0	68
Spaulding Rose	97	284	94	6.1	27.6	60.7	5.6	0.0	64
Superior	94	292	96	4.4	27.3	63.0	5.3	0.0	74
Teton	91	260	96	4.3	26.0	63.0	6.7	0.0	67
Trent	92	272	94	6.2	28.3	61.3	4.2	0.0	85
Triumph	97	285	94	6.2	32.5	58.2	3.1	0.0	64
Viking	65	164	98	2.1	13.4	60.1	24.4	0.0	65
Yampa	77	333	96	3.9	19.7	64.8	11.6	0.0	66
LSD (.05)		67							4

1-11.13 See BARC Table 1

BARC Table 9. Continued

Pedigree	Shape ⁴	Eye Depth ⁵	Sgr ⁶	GC ⁷	SS ⁸	HS ⁹	GR ¹⁰	SB ¹¹	Chip ¹²	Spt ¹³
Atlantic	2	5	9	9	5	9	9	9	2.7	O
Purple Norland	2	7	9	8	7	9	9	9	3.2	O
Platte	2	5	9	9	7	9	9	9	3.0	O
Plymouth	2	9	9	3	5	9	9	5	3.7	O
Potomac	2	3	7	7	5	9	9	9	5.0	O
Raritan	3	5	9	7	7	9	9	5	4.4	O
Record	2	5	3	9	8	9	7	9	3.1	S
Red Burt	3	3	9	9	5	9	9	3	4.8	O
Red Glo	2	3	9	9	5	9	9	9	4.5	S
Red Kote	2	7	8	7	5	9	9	9	3.2	O
Red Warba	2	3	7	5	8	9	9	5	4.7	S
Redskin	2	3	9	7	7	9	9	3	4.1	O
Reliance	2	5	8	5	7	9	9	9	4.8	O
Rural New Yorker	2	3	9	9	5	9	9	9	4.0	O
Rushmore	8	5	7	9	5	9	9	9	3.5	O
Sable	2	7	9	8	5	9	9	9	5.0	O
Satapa	2	3	9	7	5	9	9	3	4.1	O
Saturna	2	5	3	9	8	9	9	9	2.0	O
Shurchip	2	5	9	9	5	9	9	9	3.5	S
Snowflake	2	3	9	7	5	9	7	9	4.0	O
Spaulding Rose	3	3	5	9	7	9	9	9	3.4	O
Superior	2	7	9	9	7	9	9	9	2.4	O
Teton	2	7	9	5	5	9	9	3	3.9	O
Trent	2	5	9	8	7	9	9	9	1.8	O
Triumph	2	3	7	9	7	9	9	9	5.0	O
Viking	2	7	9	5	5	9	9	9	4.7	O
Yampa	3	5	9	5	7	9	9	9	4.1	O

¹² Chipped out of 50°F December 11, 1997: 1-2 = satisfactory, 3 = marginal

**U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE**

**Potato Genetics and Enhancement Project -
Madison, Wisconsin**

**R.E. Hannemann, Jr., A.J. Hamernik, M. Ramon,
and J.C. Kuhl**

**Introgression of resistance to late blight and
Colorado potato beetle from wild species to
cultivated potato.**

Efforts to generate hybrids between 2x(2EBN) *Solanum tuberosum* haploids and 2x(1EBN) Mexican diploid species via embryo rescue and mentor pollen were conducted during the summers of 1995 and 1996. In 1995, 3,077 pollinations were made resulting in 31 seedlings. However, none of the plants were the desired hybrid (Table 1). The failure in obtaining true hybrids was attributed to embryo rescue being performed too late. The approach was repeated during 1996 when 3,288 pollinations were made, resulting in 184 fruits. Embryo rescue was performed between 14 and 20 days after pollination (DAP) and resulted in 3,343 embryos of which 530 developed into seedlings (Table 2). In January of 1997, a unique hybrid was discovered in the population. This diploid hybrid resulted from the cross between the haploid US-W 13089 (Sebago) and *S. pinnatisectum* (PI 275233). Its hybridity has been confirmed through morphology, chromosome number and RAPD analysis. Its resistance to late blight was tested in an unsprayed replicated experiment at UW Agricultural Research Station at Hancock during the 1997 summer where the results indicate a high level of field resistance to the disease (Table 3). At the same time, a second approach using *S. berthaultii*, a 2x(2EBN) species, was conducted. The hybrids obtained with *S. tuberosum* haploids were tested for field resistance to late blight and showed a wide range of reaction from highly resistant to susceptible (Table 3).

The Colorado potato beetle (CPB) experiments were initiated during 1995 when 3,625 pollinations were conducted between *S. tuberosum* haploids and 2x(2EBN) species such as *S. bukovii*, *S. chacoense*, *S. raphanifolium*, *S. sparsipilum*, *S. tarijense* and *S. tuberosum*. During the summer of 1997, 21 families, one backcross, nine PIs, 11 PIs, six controls and one cultivar were tested for CPB resistance in the field using a 7x7 lattice where the "Norland" was used as a spreader. Individual plants were scored weekly for the

number of egg masses, larvae, and adults and percent defoliation. Only those hybrids with *S. chacoense* parents showed high resistance to the insect. However, a wide range of reaction was observed within and between families, especially some individuals with *S. tarijense* parentage tolerate the insect. The defoliation results for 20 of the families and their parents are presented in Table 4. Only defoliation values per families are shown. Although some of them reflect high values for insect attack, some individuals within the family could behave as resistant to the CPB.

**Resistance to *Phytophthora infestans* in Mexican 2x
(1EBN) wild Potato Species**

The focus of this study is on Mexican diploid 1EBN wild potato species. 1EBN species were selected because to date no known research has specifically addressed the resistance to *Phytophthora infestans* known to be present in these Mexican derived species. Additionally, the diploid nature of the species will allow for a relatively straight forward evaluation of resistant genotypes as compared to working at a higher ploidy level. Two *Solanum* species were initially selected for this study, *Solanum cardiophyllum* subsp. *cardiophyllum* (cph) and *Solanum pinnatisectum* (pnt), based on PI evaluations for susceptibility and resistance, respectively. Selection was also based on flowering characteristics and the ability to cross and obtain viable seed. *S. cardiophyllum* subsp. *cardiophyllum* PIs were selected from available plants in the field during early Fall 1996, at the UW Leelah Starks Potato Breeding Farm. *S. pinnatisectum* PIs were selected from previously screened individuals from which tubers were available. Two PIs were selected for *S. cardiophyllum* subsp. *cardiophyllum* (5 plants each) and seven PIs were selected for *S. pinnatisectum* (5 plants per PI).

Detached leaf tests were chosen for the initial determination of resistant/susceptible phenotypes. This decision was based the available resources and the flexibility of being able to screen a large number of individuals in replicated trials over a short period while maintaining the screened plant. Results could later be compared to field trials and/or whole plant evaluations. Initial work with *Phytophthora infestans* included two pathotypes, WI94-1 and ME93-2A, US1-A1 and US8-A2, respectively. The US1 pathotype was included as a control in working out the inoculation protocol previously used. Difficulties arose in implementation of detached leaf protocol such that few or no lesions

were obtained on the susceptible control, Green Mountain. More favorable results were achieved with use of Rye A media for the culturing *P. infestans* and the addition of a cold shock treatment of the inoculum prior to application. Furthermore, four additional pathotypes were obtained from Dr. Ken Deahl, USDA, ARS, Beltsville, including: MSU96 (US8-A2), Colorado-C (US8-A1), 94-31 (US1-A1) and SA96-44 (US1-A1). Screening with detached leaves was delayed during summer field trials.

Reciprocal crosses of the above PIs were generated between *S. cardiophyllum* and *S. pinnatisectum*. A total of 2,601 cph x pnt and 801 pnt x cph crosses were completed. One fruit with 4 seeds were recovered from the cph x pnt crosses. A total of 64 fruit and 1882 seeds were recovered from the pnt x cph crosses. It is hoped that by crossing an established resistant individual with a susceptible individual that a segregating population will be generated. Unfortunately until resistant and susceptible individuals can be established, phenotypes are uncertain. Currently one third of the seed from each fruit is being allowed to germinate allowing for the evaluation of seed viability. The recovered plants are being grown in the greenhouse for detached leaf evaluation this fall.

Field tests with naturally occurring inoculum were conducted this past summer at the Hancock field station to determine resistant/susceptible phenotypes to *P. infestans* of all parental plants, as well as several additional species/PIs that have previously been identified as having susceptibility or resistance to *P. infestans*. Several complicating factors led to inconclusive results, and the inability to establish the specific responses to *P. infestans*. In particular, the late arrival of *P. infestans* and the heavy infestation of *Alternaria solani* (early blight) was such that defoliation data were collected regardless of the causal agent. Results were further complicated with early occurrence of blackleg, leading to significant plant reduction in some treatments, in particular one of the PIs of *S. cardiophyllum*. The inability to distinguish defoliation specifically caused by *P. infestans* resulted in observations that reflect total defoliation. Table 5 presents the observed results for those PIs that have been used in crosses to date. From the table it would appear that PI 347759 shows signs of susceptibility, however, this same PI lost many plants to blackleg early in the season. As a result of the inconclusive data, detached leaf tests need to be conducted to determine the resistance/susceptible phenotypes of parental plants.

Once phenotypic characterization of selected individuals can be established molecular mapping techniques can be applied to identify the resistant genotype and compared to previously established resistance on chromosomes 5, 8 and 11. The diploid nature of the selected species will greatly simplify genetic analysis for resistant loci in a segregating population. To date, DNA has been isolated from all plants used in crosses. Forty-seven tomato genomic probes from Tanksley have been selected for use in screening. The selected probes have previously been characterized as having a low number of polymorphic bands and evenly distributed over the twelve chromosomes. Initial screens indicate polymorphisms between and within *S. cardiophyllum* subsp. *cardiophyllum* and *S. pinnatisectum* species/PIs. Once the phenotypes have been established, the parents and eventually the F₁ progeny can be screened for polymorphisms, leading to a molecular characterization of the resistance to *P. infestans* in *S. pinnatisectum*.

Imperative for further progress on this project is the determination of phenotypic response to *P. infestans*. It must be established that the PIs and specifically the individuals that are being worked with are indeed resistant and susceptible. Once individual phenotypes are characterized a guided approach to crossing will be initiated generating more F₁s, as well as beginning test crosses. Additionally, a more systematic approach may be applied to the collection of RFLP data, focusing on compatible resistant/susceptible parents that have produced viable seed.

Evaluation of Parental Materials and Enhancement Selections for Resistance to Late Blight, *Verticillium* Wilt and Colorado Potato Beetle in Field Tests

To aid us in identification of useful parents and enhancement selections as a part of our joint National Cooperative Enhancement Project effort, we have begun to evaluate our materials in unsprayed plots for resistance to late blight, Colorado potato beetle, and *Verticillium* wilt in an infected field. These tests augment our routine evaluations for yield, chipping, specific gravity, adaptation, etc. which are done at various stages in the development of our materials. The following is a summary of our field data taken on materials entered in these plots this past year at the UW Agricultural Research Station at Hancock.

Late Blight. Six hundred and sixty-five clones were tested for their reaction to natural late blight infection in the field at the University of Wisconsin's

Agricultural Research Station at Hancock. This was a large unreplicated trial, near Dr. Stevenson's (UW Dept of Plant Pathology) late blight trials. Included among these were 118 foreign varieties, 89 foreign breeding stocks, 95 haploid-species hybrids, 25 late blight differentials and 317 enhancement selections (Table 6). Table 7 presents some of the diversity in reaction to late blight observed. In general the check variety, Ranger Russet, was killed by the second reading, August 29. Varying degrees of resistance/susceptibility were expressed over the four readings. By the last reading on September 12, essentially all materials were killed, except for foreign breeding stocks CEX-69-1 (20%), PI 517317 (30%), and the bacterial wilt line MS 35.9 (10%). Heavy early blight infection confounded the readings in this plot. No attempt was made to separate damage from early blight from that of late blight.

In a second field at this location, a number of species (Table 8) were evaluated for field resistance to late blight, as well as hybrid families with potential late blight resistance (Table 9). A sample of the PIs are listed. Excellent resistance is noted for a number of the Mexican species. A sample of some of the clones from the families is also listed. Varying degrees of resistance/susceptibility are indicated, but among these are some excellent resistance responses, with only 20-30 % defoliation at the end of the season.

The information gathered from the late blight differentials (Table 10) indicates only one 1521C (3) showed resistance at the end of the season. Most were heavily infected by the second reading. Again these results are confounded with the response to early blight.

A comparison of late blight readings between 1996 and 1997 was made using the same clones (Table 11). In general, 1997 was a more severe year. Again CEX-69-1 proved to be the most resistant among these lines as did PI 527315. The first readings seem to be correlated between years, but the lack of correlation was evident with the second reading. This may in part be due to confounding with early blight, but could also indicate a different genotype of the fungus was present.

Verticillium wilt. An unreplicated evaluation for *Verticillium* wilt resistance was planted at the UW Agricultural Research Station at Hancock. Tubers were planted into a field used by Dr. Rouse (UW, Dept of Plant Pathology) for early dying studies and has high levels of the pathogen in it. Six hundred and thirty

clones were tested (Table 6). Only visual symptoms were evaluated. Table 12 lists some of the most resistant materials. These will need to be screened a second year in replicated trials and evaluated more closely to determine their true resistance. Flava, Nevkij and HET 1278-2 showed no visual symptoms of *Verticillium* wilt, early or late blight. Again, early and late blight had a confounding effect on the plot.

Colorado Potato Beetle. Six hundred and thirty-five clones were evaluated for resistance to Colorado potato beetle in unsprayed plots at the UW Agricultural Research Station at Hancock in two unreplicated plots (Table 6). One was near Dr. Wyman's (UW Dept of Entomology) Colorado potato beetle plots. Very little resistance was found in these materials (Tables 13, 14). All essentially were defoliated by the beetles by the end of the season, though some held up with 10-30% defoliation until the next to the last reading. High levels of resistance were noted among some families (Tables 15, 16), whose wild species parent had been reported to be resistant to Colorado potato beetle. The species/Pis showing these resistance were *S. chacoense* or *S. tarijense*. The best resistance was noted for *S. chacoense* PI 217451 and for PI 473243.

From this work, we can see that there are some promising late blight, *Verticillium* wilt and Colorado potato beetle resistant materials in the pipeline among enhancement selections and parental materials. These will provide new and augment existing sources of resistance in our cooperative national enhancement effort.

Acknowledgements

We wish to thank University of Wisconsin Agricultural Research Stations for their support at the Hancock Agricultural Research Station and the UW Lelah Starks Potato Breeding Farm at Rhinelander, and the superintendents of those stations, Mr. C. J. Kostichka and Mr. B. D. Bowen, respectively, for their support and for the technical assistance of Mr. A. J. Hamernik, all of whom made this work possible.

Enhancement Project Table 1. Results for 1995 pollinations between 2x(2EBN) Mexican species and *S. tuberosum* haploids using double pollinations and embryo rescue.

<u>Species</u>	<u>Use</u>	<u>No. Pollinations</u>	<u>No. Fruits</u>	<u>No. Embryos</u>	<u>No. Plants</u>
<i>S. bulbocastanum</i>	Female	634	0	0	0
	Male	400	8	85	21
<i>S. pinnatisectum</i>	Female	1127	7	16	0
	Male	642	10	24	9
<i>S. trifidum</i>	Female	189	1	0	0
	Male	85	3	1	1
Total		3077	29	126	31

Enhancement Project Table 2. Results for 1996 pollinations between 2x(2EBN) Mexican species and *S. tuberosum* haploids using double pollinations and embryo rescue.

<u>Species</u>	<u>Use</u>	<u>No. Pollinations</u>	<u>No. Fruits</u>	<u>No. Embryos</u>	<u>No. Plants</u>
<i>S. bulbocastanum</i>	Female	147	0	0	0
	Male	219	33	508	74
<i>S. pinnatisectum</i>	Female	556	3	244	0
	Male	757	50	686	202
<i>S. trifidum</i>	Female	253	17	540	59
	Male	1356	81	1365	195
Total		3288	184	3343	530

Enhancement Project Table 3. Summary of the 1997 late blight field test at Hancock.

<u>Category</u>	<u>Percentage</u>	<u>% Defoliation</u>
F1	MPI 62526/5 x ber 473331	23
Species	ber 473331	10
F1	US-W 13089 (Sebago) x pnt 275233	1
Species	pnt 275233	1
Haploid	US-W 2900	95
F1	US-W 2900 (Merrimack) x ber 265858	38
Species	ber 265858	8
Haploid	US-W 551	100
F1	US-W 551 (Chippewa) x ber 265858	70
Species	ber 265858	8
Control	Snowden	100
Haploid	US-W 1818	100
Control	Ranger Russet	100
Control	Russet Burbank	100
Haploid	US-W 2685	100
Control	Atlantic	100

Enhancement Project Table 4. Percent defoliation for the 1997 Colorado potato beetle field test at Hancock.

<u>Category</u>	<u>Percentage</u>	<u>% Defoliation</u>
Haploid	PI 285168 (MPI 62.526/5)	100.0
F1	PI 285168 x buk 265876	100.0
Species	buk 265876	100.0
Haploid	US-W 493 (adg)	100.0
F1	US-W 493 x buk 265876	97.7
Species	buk 265876	100.0
Haploid	US-W 2668 (Chippewa)	100.0
F1	US-W 2668 x chc (133123)	51.7
Species	chc 133123	7.0
Haploid	US-W 518 (Chippewa)	100.0
F1	US-W 518 x chc 265576	36.7
Species	chc 265576	23.3
Haploid	G-65 (MPI 44.1016/10)	80.0
F1	G 65 x chc 473402	93.3
Species	chc 473402	5.0
Haploid	US-W 2668 (Chippewa)	100.0
F1	US-W 2668 x chc 473405	21.7
Species	chc 473405	0.3
Haploid	US-W 13030 (adg PI 347773.16)	100.0
F1	US-W 13030 x chc 473405	91.7
Species	chc 473405	0.3
Haploid	US-W 730 (Wis Ag 231)	100.0
F1	US-W 730 x rap 473528	90.0
Species	rap 473528	99.7
Haploid	US-W 3773 (Merrimack)	99.7
F1	US -W 3773 x rap 473528	100.0
Species	rap 473528	99.7
Haploid	US-W 2850 (Wis Ag 231)	100.0
F1	US-W 2850 x rap 473528	71.3
Species	rap 473528	99.7
Haploid	US-W 2850 (Wis Ag 231)	100.0
F1	US-W 2850 x spl 473504	100.0
Species	spl 473504	98.0
Haploid	US-W 3458 (Merrimack)	100.0
F1	US-W 3458 x spl 473504	98.3
Species	spl 473504	98.0

Enhancement Project Table 4. Continued.

<u>Category</u>	<u>Percentage</u>	<u>% Defoliation</u>
Haploid	G-65 (MPI 44.1016/10)	80.0
F1	G 65 x spl 473504	100.0
Species	spl 473504	98.0
Haploid	US-W 13030 (adg PI 347773.16)	100.0
F1	US-W 13030 x spl 473504	60.0
Species	spl 473504	98.0
Haploid	US-W 730 (Wis Ag 231)	100.0
F1	US-W 730 x spl 473504	98.3
Species	spl 473504	98.0
Haploid	US-W 2850 (Wis Ag 231)	100.0
F1	US-W 2850 x tar 414148	93.3
Species	tar 414148	35.0
Haploid	US-W 13030 (adg PI 347773.16)	100.0
F1	US-W 13030 x tar 414148	99.7
Species	tar 414148	35.0
Haploid	US-W 73 (Merrimack)	100.0
F1	US-W 73 x tbr 473255	86.7
Species	tbr 473255	100.0
Haploid	US-W 518 (Chippewa)	100.0
F1	US-W 518 x tbr 473255	91.7
Species	tbr 473255	100.0
Cultivar	W 1005	77.0
Backcross	W 1005 x F1#5	93.3
F1	US-W 493 x chc 265576	36.7
Control	Atlantic	98.3
Control	Katahdin	98.0
Control	Norland	100.0
Control	Ranger Russet	98.3
Control	Russet Burbank	100.0
Control	Snowden	100.0
Cultivar	W 1005	77.0

Enhancement Project Table 5. Parental evaluation: Average percentage defoliation.

Species	PI	R/S ⁺	Average Percent Defoliation by PI							
			7/28/97	8/5/97	8/11/97	8/18/97	8/27/97	9/3/97	9/10/97	9/16/97
<i>S. cardiophyllum</i> subsp. <i>cardiophyllum</i>	283062	R	0	3	0	3	5	13	53	83
<i>S. cardiophyllum</i> subsp. <i>cardiophyllum</i>	347759	-	26	35	21	34	43	97	95	100
<i>S. pinnatisectum</i>	186553	R	0	0	0	18	6	40	73	92
<i>S. pinnatisectum</i>	190115	-	0	0	0	0	4	57	77	86
<i>S. pinnatisectum</i>	253214	-	0	4	0	30	37	67	86	95
<i>S. pinnatisectum</i>	275234	R	0	0	0	9	4	26	67	88
<i>S. pinnatisectum</i>	347766	-	0	0	0	12	23	54	82	94
<i>S. pinnatisectum</i>	184764	R	0	0	0	7	16	41	68	92
Binje			0	0	0	1	36	99	100	
Green Mtn.			0	0	0	7	55	99	100	
USW 1818 (Chippewa)			0	0	0	13	63	100		
Norland			0	0	0	53	99	100		
Ranger Russet			0	0	0	3	64	100		
Grand Average			6	10	4	16	27	56	72	90

⁺ 1986 Inventory for late blight

Enhancement Project Table 6. List of materials included in the Colorado potato beetle, late blight and *Verticillium* wilt tests at Hancock in 1997.

	<u>Late Blight</u>	<u>CPB</u>	<u>Vert</u>
Foreign Varieties	118	117	117
Late Blight Differentials	25	-	-
Rowe Selections	7	7	7
DH Selections	31	31	31
Varieties x BP	2	2	2
Sp/Hap Tuberosum	8	6	6
Bacterial Wilt	11	11	11
Foreign Breeding Stocks	89	89	88
DH Series	58	58	57
HET Rhinelander	10	8	6
HVS Rhinelander	6	6	6
HET Diallel	2	2	2
HP Series	19	19	19
Enhancement Selections	7	7	7
90 Enhancement Selections	5	5	5
91 Enhancement Hybrids	32	32	32
92 Enhancement Hybrids	42	42	42
93 Enhancement Hybrids	193	193	192
	<u>665</u>	<u>635</u>	<u>630</u>

Enhancement Project Table 7. 1997 late blight evaluation based on percent defoliation at Hancock (2nd field).

<u>Line</u>	<u>August 22</u>	<u>August 29</u>	<u>September 5</u>	<u>September 12</u>
Check				
Ranger Russet	20	100	100	100
Foreign Varieties				
Ackersegen	10	15	30	90
Alpha	10d	30d	90	100
Bevelander	10d	40d	100	100
Bzura	20	30	90	100
Capella	10d	10d	20d	100
Capiro	5d	10d	30	95
Cosima	10d	50	90	100
Caulin Alto	<5d	30	95	100
Flava	<5d	20	95	100
Kufri Jeevan	10d	20	90	100
Kufri Jyoti	20	40	95	100
Libertas	10	30	95	100
Maris Piper	10d	50	100	100
Noordeling	5	10	100	100
Vekaro	<5d	5	90	100
Victor	10d	30	95	100
San	10	40	90	100
Stobrawa	10	50	100	100
Foreign Breeding Stocks				
KOM D542	10d	60	100	100
CEBECO 60238-25	10	10	40	90
Des B-53	20	60	80	100
CIP-M India 1062	<5	10	20	100
N503-1	10	30	95	100
PI 499999	<5	20	40	100
CEX-69-1	0	<5	10	20
PI 517317	<5	15	15	30
V-2 (CIP 375335.1)	0	20	80	95
PI 527315	0	15	40	80
BL 1-10	10	20	90	100
S. tbr (CIP 702867)	5d	10	70	95
CFS 69.1 (CIP 676005)	10	40	60	80
Late Blight Differentials				
1521C (3)	<5d	20	30	90
Bacterial Wilt				
BR 63.74	20	60	90	95
MS 35.9	10	10d	10d	10d
HET Series				
1278-2 US-W 4056(Merr) x chc	<5	10	70	100
1278-6 US-W 4056(Merr) x chc	10d	20	100	100
1278-8 US-W 4056(Merr) x chc	10d	50	100	100
1278-9 US-W 4056(Merr) x chc	20	40	100	100
1284-7 US-W 730 (W 231) x spl	<5d	15	100	100

Enhancement Project Table 8. Late blight resistance among species at Hancock in 1997.

<u>Species</u>	<u>PI</u>	<u>% Defoliation</u>	<u>Species</u>	<u>PI</u>	<u>% Defoliation</u>
<i>S. tuberosum</i>	243361	100	<i>S. hjertingii</i>	283103	100
<i>S. brachycarpum</i>	230459	70-100	<i>S. microdontum</i>	473171	20-100
"	239402	95	<i>S. phureja</i>	225678	95-100
<i>S. bulbocastanum</i>	243504	0-10	"	225681	100
"	243505	0-10	"	243468	50-100
"	243506	10-50	"	320363	70-100
"	243508	5-90	<i>S. polyadenium</i>	275238	0-70
"	243509	5-90	"	310963	10-80
"	243510	0-20	"	320342	30-70
"	243511	0-10	<i>S. pinnatisectum</i>	186553	90-100
"	243512	0-10	"	230489	90-100
"	275192	0-10	"	275230	10-90
<i>S. brachistotrichum</i>	279244	100	"	275231	90-100
"	320265	90-100	"	275232	100
<i>S. cardiophyllum</i>	283062	100	"	275233	10-90
"	283063	100	"	275234	90-95
<i>S. demissum</i>	160220	10-100	"	275235	100
"	160221	10-50	"	275236	30-100
"	161169	10-100	<i>S. stoloniferum</i>	161178	70-100
"	161366	5-50	"	195166	90-100
"	175404	10-50	"	205510	90-100
"	205517	40-100	"	230490	90-100
"	218047	10-100	"	239410	100
"	230487	10-20	<i>S. magistacrolobum</i>	195210	100
"	275208	10-100	<i>S. trifidum</i>	283064	10-100
"	275209	20-100	"	283065	90-100
<i>S. fendleri</i>	225661	95-100	"	283104	70-95
"	161727	10-30	<i>S. verrucosum</i>	161174	100
			"	275256	50-100

Enhancement Project Table 9. 1997 late blight evaluation based on percent defoliation at Hancock (2nd Field).

Line	PI/Cross	Aug. 29	Sept. 3	Sept. 12	Sept. 19	Sept. 26
3-19	1584C (10) x Kenn	<5	5	10	30	100
3-23	" "	0	5	5	20	60
5-4 (R 8)	1584C (10) x W231	<5	10	10	90	100
5-1 (R 19)	" "	10	20	60	95	100
5-3 (R 19)	" "	10	10	5	70	50
5-4 (R 19)	" "	5	60	70	80	100
5-17 (R 19)	" "	0	<5	<5	10	40
5-22 (R 19)	" "	5	5	5	30	80
5-29 (R 19)	" "	10	10	20	95	100
5-33 (R 19)	" "	10	10	5	20	90
5-38 (R 19)	" "	5	10	10	20	80
5-1 (R 20)	" "	5	10	10	90	100
9-12 (R 22)	215618 (R1R2R3R4) x W1005	10	30	30	70	95
11-3 (R 24)	303151 x Kat	5	10	20	90	95
11-4 (R 24)	" "	5	10	20	30	100
11-5 (R 24)	" "	5	10	10	30	90
12-2 (R 24)	W870 x tbr 583331	5	10	10	30	95
12-25 (R 24)	" "	<5	5	10	90	100
12-26 (R 24)	" "	<5	5	10	100	100
12-27 (R 24)	" "	<5	10	20	95	100
12-8 (R 25)	" "	10	5	10	80	100
12-9 (R 25)	" "	<5	10	10	90	100
12-22 (R 25)	" "	<5	10	30	100	100
12-25 (R 25)	" "	<5	10	70	95	100
12-36 (R 25)	" "	<5	5	10	60	95
12-37 (R 25)	" "	<5	10	20	100	100
12-6 (R 26)	" "	5	5	20	100	100
12-12 (R 26)	" "	5	5	60	100	100
12-24 (R 26)	" "	<5	5	10	40	99
12-3 (R 27)	" "	10	20	20	100	100
12-13 (R 27)	" "	5	10	20	90	100
12-33 (R 27)	" "	5	5	40	100	95
12-34 (R 27)	" "	0	5	10	70	95
13-3 (R 28)	W870 x tbr 583334 (CIP 391021)	0	5	10	70	100
13-18 (R 28)	" "	0	5	10	30	95
13-22 (R 28)	" "	0	5	10	90	100
13-29 (R 28)	" "	10	<5	5	20	100
13-1 (R 29)	" "	0	10	20	100	100
13-2 (R 29)	" "	5	10	20	90	95
14-10 (R 31)	W870 x tbr 583341 (CIP 391137)	<5	10	30	80	90
15-13 (R 31)	W231 x tbr 583331 (CIP 391013)	<5	10	20	30	70
15-15 (R 31)	" "	5	20	60	95	100
15-21 (R 31)	" "	5	20	30	100	100
15-1 (R 32)	" "	<5	10	20	100	100

Enhancement Project Table 9. Continued.

<u>Line</u>	<u>PI/Cross</u>	<u>Aug. 29</u>	<u>Sept. 3</u>	<u>Sept. 12</u>	<u>Sept. 19</u>	<u>Sept. 26</u>
15-2 (R 32)	W231 x tbr 583331 (CIP 391013)	0	5	10	95	100
15-9 (R 32)	" "	0	5	10	10	60
15-10 (R 32)	" "	5	10	30	90	100
15-38 (R 32)	" "	5	10	30	90	99
15-9 (R 33)	" "	0	10	20	90	95
15-11 (R 33)	" "	<5	5	10	20	70
15-15 (R 33)	" "	0	5	5	100	100
15-16 (R 33)	" "	<5	10	20	100	100
15-29 (R 33)	" "	<5	10	20	90	100
15-35 (R 33)	" "	5	10	30	95	100
15-39 (R 33)	" "	5	10	10	80	100
15-1 (R 34)	" "	5	10	20	100	100
16-19 (R 34)	W231 x tbr 583334 (CIP 391021)	5	10	10	10	20
16-13 (R 34)	" "	5	20	20	95	100
16-15 (R 34)	" "	-	-	5	10	90
16-12 (R 35)	" "	0	5	5	10	20
16-19 (R 35)	" "	10	5	10	40	100
16-22 (R 35)	" "	10	5	20	100	100
16-35 (R 35)	" "	<5	5	30	100	100
16-36 (R 35)	" "	<5	5	20	100	100
16-16 (R 36)	" "	<5	10	50	100	100
17-1 (R 37)	W231 x tbr 583341 (CIP 391137)	<5	10	20	90	100
17-13 (R 37)	" "	5	5	10	80	100
17-24 (R 38)	" "	5	20	70	70	70
17-31 (R 38)	" "	10	10	10	10	30
Check						
Ranger Russet		35	100	100	100	100

Enhancement Project Table 10. Late blight differential response at Hancock in 1997.

<u>Clone</u>	<u>Genotype</u>	<u>Aug. 22</u>	<u>Aug. 29</u>	<u>Sept. 5</u>	<u>Sept. 12</u>
201401	R1	20	100	100	100
423651	R1	20	100	100	100
834 C (29)	R1	90	100	100	100
201402	R2	30	100	100	100
203905	R2	100	100	100	100
3RC-8	R2	50	100	100	100
423653	R3	50	100	100	100
201404	R4	20	90	100	100
203900	R4	100	100	100	100
423654	R4	100	100	100	100
303148	R7	30	100	100	100
423655	R7	30	100	100	100
303149	R8	30	90	100	100
423656	R10	40	100	100	100
203901	R1R2	20	100	100	100
423657	R1R2	10	100	100	100
201407	R2R3	10	90	100	100
2070 AB (31)	R2R4	20	95	100	100
1584C (10)	R3R4	10	80	100	100
215622	R1R2R3	100	100	100	100
215620	R2R3R4	30	100	100	100
215618	R1R2R3R4	<5d	95	100	100
303151	multigenic	10	90	100	100
1521C (3)		<5d	20	30	90
Ranger Russet		25	100	100	100

Enhancement Project Table 11. Comparison of late blight resistance among selections based on percent defoliation in 1996 and 1997.

<u>Selections</u>	<u>8/5/96</u>	<u>8/22/97</u>	<u>8/8/96</u>	<u>8/29/97</u>	<u>8/19/96</u>	<u>9/5/97</u>	<u>8/26/96</u>	<u>9/12/97</u>	<u>9/3/96</u>
Libertas	5	10	10	30	15	95	25	100	90
Talukdari	15	40	60	100	98	100	100	100	100
KOM D 149	10	10	10	90	60	100	75	100	100
PB sn	5	<5d	5	95	25	100	75	100	100
PI 227680	5	20	10	95	25	100	85	100	100
PI 230659	<5	30	5	95	20	100	60	100	100
Dee 133.5	5	60	10	100	50	100	100	100	100
PI 257346.1	20	30	90	100	100	100	100	100	100
IAC 2	<5	10	<5	80	10	100	40	100	90
PI 257538	10	20	20	100	50	100	95	100	100
CEX 69-1	<5	0	1	<5	<5	10	15	20	60
V-2	5	0	5	20	25	80	50	95	90
PI 527315	1	0	1	15	<5	40	10	80	60
PI 527316	<5	20	1	95	15	100	40	100	90
CFS 69.1	5	10	1	40	25	60	80	80	99
PI 423654	40	100	60	100	100	100	100	100	100
SSRPB 2182 ef (7)	5	30	20	100	60	100	100	100	100
1584C (10)	1	10	1	80	10	100	75	100	99
SSRPB 2424a (5)	<5	30	10	90	20	100	70	100	100
PI 423656	<5	40	5	100	10	100	70	100	100
Ranger Russet	15	20	60	100	100	100	100	100	100

Enhancement Project Table 12. *Verticillium* wilt resistant parents and enhancement selections based on preliminary evaluations at Hancock in 1997.

<u>Foreign Varieties</u>	<u>Breeding Stocks</u>	<u>Bacterial Wilt</u>	<u>Species-haploid</u>	<u>HET</u>	<u>Enhancement</u>
Capella	MPI 44.335/128	BR 63.74	1081-4R	1278-2**	93-1300-7
Capiro	MPI 49.747/31	PI 527319	1267-2R	1278-6	93-2630
Flava**	KOM D 149	8-5	1275-1R	1278-8	93-2957
Greta	KOM D 542	8-43		96-10231	94-4073-1
Hokkai	KOM F 558	T-12		96-10232	94-4199-11
Izstades	KOM F 754	BR 63.65			94-4296-17
Libertas	MPI 44.1016/10	MS 35.9			94-4338-1
Nevikij**	PI 227680				94-4354-1
Pirola	IAC 2				
Quemchi #16	IAC 705				
Razvarsitiyji	MPI 55.957/96				
Sulev	MPI 50.140/5				
Talukdari	PI 321614				
Vekaro	Des B-53				
Victor	LT-1				
Pilica	CEX-69-1				
San	PI 527315				
Ruta	BL 1-10				
CISA 537030	79V100-40				
	79V106-18				
	S. tbr (CIP 702867)				
	CFS 69.1 (CIP 676005)				
	CIP 379706.27				
	CIP 379706.34				
	96-10095				

** No symptoms of wilt, early or late blight

Enhancement Project Table 13. Colorado potato beetle resistance of selected clone at Hancock (Field 1).

<u>Clone</u>	<u>July 7</u>	<u>July 14</u>	<u>July 21</u>	<u>July 28</u>
Rowe Selections				
12373-75-3	90	90	95	100
12378-1	50	50	50	95
12380-9	25	50	90	100
Bacterial Wilt				
BR 44.7	30	60	90	95
8-5	30	20	20	95
HP & HET Series				
79 HP 29-2	5	10	75	100
1278-2	30	30	40	90
1278-6	40	30	50	95
Enhancement Selections				
96-10244	5	10	70	100
96-10235	20	30	100	100
96-10455-6	10	10	40	95
90 DH 1-1	20	100	100	100
90 DH 30-1	95	100	100	100
90 DH 127-1	30	90	100	100
93-1140-7	15	50	100	100
93-1224	30	100	100	100
93-2612	30	85	100	100
Check				
Norland	55	75	95	100

Enhancement Project Table 14. Colorado potato beetle resistance of selected clones at Hancock (Field 2).

<u>Clone</u>	<u>July 7</u>	<u>July 14</u>	<u>July 21</u>	<u>July 28</u>	<u>August 14</u>
Foreign Varieties					
Advira	5	5	20	50	95
Bzura	5	25	40	30	90
Carmikavskij	5	5	5	10	95
Ottar	10	10	10	30	100
Primicia Inta	5	5	5	30	100
Troll	0	5	10	10	100
Voran	0	<5	5	10	100
Provost	0	5	20	40	100
Foreign Breeding Stocks					
CIP-M India 1018	0	15	90	90	100
N 503-1	10	20	20	30	100
PI 499999	0	20	30	40	100
PI 527316	0	5	70	80	100
79V106-18	0	10	40	70	95
GL76B/103	0	<5	40	50	100
DH Series					
US-W 9231.13	5	5	30	100	100
Check					
Norland	5	20	25	30	100

Enhancement Project Table 15. Colorado potato beetle resistance among families at Hancock in 1997.

<u>Family/Clone</u>	<u>July 7</u>	<u>July 14</u>	<u>July 21</u>	<u>July 28</u>	<u>August 14</u>	<u>August 22</u>
CPB 7-1	0	0	0	0	0	0
-2	0	0	0	0	10	10
-3	0	0	0	0	20	20
-4	0	0	<5	0	20	30
-5	0	0	0	0	40	50
-6	0	0	0	0	30	40
-7	0	0	0	0	30	50
-8	0	0	0	10	10	10
-9	0	0	0	0	0	0
-10	0	0	0	0	5	<5
-11	0	0	0	0	10	20
-1a	0	0	0	0	0	0
-2a	0	0	0	0	0	0
CPB 8-1	0	0	5	5	90	99
-2	0	0	10	15	80	95
-3	0	0	10	30	90	100
-4	0	0	5	10	80	95
-5	-	-	-	-	-	-
-6	0	0	0	5	80	95
-7	0	<5	0	0	80	99
-8	0	0	0	0	70	90
-9	0	0	0	<5	50	60
-10	0	5	10	5	60	95
-11	5	5	5	<5	60	99
-1a	0	5	10	10	70	90
-2a	0	<5	0	0	80	95
-3a	0	0	0	0	80	99
-4a	0	<5	0	0	90	95
-5a	0	<5	0	0	90	95
-6a	0	0	0	0	90	95
-7a	0	5	5	0	80	90
-8a	0	0	10	0	80	90
-9a	0	<5	0	0	50	30
-10a	0	5	5	<5	50	50
-11a	5	30	20	10	60	70
CPB 11-1	0	0	0	0	60	90
-2	0	0	0	<5	80	85
-3	0	<5	5	5	70	95
-4	0	20	5	5	50	90
-5	0	0	0	0	60	90
-6	0	0	5	5	50	90
-7	0	0	0	0	40	90
-8	0	0	10	20	20	20

Enhancement Project Table 15. Continued.

<u>Family/Clone</u>	<u>July 7</u>	<u>July 14</u>	<u>July 21</u>	<u>July 28</u>	<u>August 14</u>	<u>August 22</u>
CPB 11-9	0	0	0	5	60	80
-10	0	0	0	0	50	80
-11	0	0	0	<5	40	80
-1a	-	-	-	-	-	-
-2a	0	<5	5	<5	30	50
-3a	0	0	15	0	60	90
-4a	0	0	<5	0	60	95
CPB 12-1	-	-	-	-	-	-
-2	0	0	<5	<5	30	90
-3	0	0	0	<5	40	100
-4	-	-	-	-	-	-
-5	0	0	5	5	40	60
-6	0	0	0	0	30	30
-7	-	-	-	-	-	-
-8	0	0	0	0	20	10
-9	0	<5	20	5	10	10
-10	0	<5	0	5	15	30
-11	-	-	-	-	-	-
Checks						
Norland	0	5	15	-	75	100

Note: CPB 7 = US-W 357 (Merr) x chc 217451
 CPB 8 = US-W 482 (Merr) x tar 412148
 CPB 11 = US-W 482 (Merr) x tar 473242
 CPB 12 = US-W 482 (Merr) x tar 473243

Enhancement Project Table 16. High levels of Colorado potato beetle resistance observed among clones of some families at Hancock.

<u>Family</u>	<u>% Defoliation</u>
CPB 7 -1	0
-2	10
-3	20
-4	30
-5	50
-6	40
-7	50
-8	0
-9	0
-10	<5
-11	20
CPB 8-9	60
-9a	30
10	50
-11	70
CPB 11-8	20
-8a	60
-2	50
CPB 12-5	60
-6	30
-8	10
-9	10
-10	30

Note: CPB 7 = US-W 357 (Merr) x chc 217451

CPB 8 = US-W 482 (Merr) x tar 414148

CPB 11 = US-W 482 (Merr) x tar 473242

CPB 12 = US-W 482 (Merr) x tar 473243

NORTH CENTRAL REGIONAL POTATO TRIALS

Richard Novy, Assistant Professor and Bryce Farnsworth, Research Specialist, Plant Sciences Dept., North Dakota State University and Cooperators

Cooperators in 1997:

Iowa, Dr. Bill Summers; Louisiana, Dr. Charlie Johnson and Mr. Gil Barker; Michigan, Dr. Dave Douches; Minnesota, Dr. Christian Thill; Nebraska, Dr. Alexander D. Pavlista; Ohio, Dr. Richard Hassell; Wisconsin, Dr. Jiming Jiang, Dr. Horia Groza, and Mr. Bryan Bowen. Technical assistance from Michael Schwalbe in North Dakota is appreciated.

Eight states participated in the North Central Regional Trials in 1997. The Canadian provinces of Alberta and Manitoba will again participate in the trials in 1998.

Cooperating States 1997

STATE OR PROVINCE	DATE PLANTED	TOTAL DAYS		
		DATE HARVESTED	TO HARVEST	I/D ¹
Iowa	6/3	9/4	93	I
Louisiana	-	-	-	D
Michigan	5/6	9/23	140	I
Minnesota	4/23	9/15	145	I
Nebraska	5/14	9/26	135	I
North Dakota	5/30	10/6	129	D
Ohio	5/22	9/17	118	D
Wisconsin	4/22	9/15	146	I

¹ I = Irrigated (most irrigation was supplemental to rainfall); D = Dryland

Trial conditions: The overall objective of the trial is to test the performance of advanced selections for uniformity over a wide variety of locations and environments. In most cases, rainfall was supplemented with irrigation, but three sites were dryland (ND, OH, LA). Adverse growing conditions in Iowa and North Dakota (flooding of trial) dramatically lowered yields and did not allow for an effective evaluation of the entries' merits. Their trial results have been included in all tables, but regional averages for Tables 1, 2 and 3, *do not* include Iowa or North Dakota. Louisiana's trial was flooded early in the growing season with subsequent seed rot. No harvest data was obtained from that site.

Entries: Twelve advanced selections were received from Michigan, Minnesota, North Dakota, and Wisconsin. Seed of the check varieties Norchip, Atlantic, Snowden, Red Norland, Red Pontiac, Russet Burbank, and Russet Norkotah were supplied by North Dakota in order to

ensure a standard seed source. The selections, number of years in the trial (YIT), and descriptions are given below:

<u>Selection</u>	<u>YIT</u>	<u>Description</u>
MN16180	2	pale, yellow fleshed tablestock
MN16489	2	pink-eyed white chipper
MN16966	1	processor with white skin, yellow-flesh
MSB073-2	1	chipper with netted skin
MSB076-2	3	white chipper
MSB106-7	2	russet tablestock
ND2225-1R	3	red tablestock
ND2676-10	2	white chipper
ND3828-15	1	white chipper
W1151rus	2	russet tablestock
W1313	2	white chipper
W1348rus	1	russet

Total and US No. 1 Yield: MN16966 (403 cwt/A) MN16489 (396 cwt/A), and MSB0106-7 (394 cwt/A) had the highest total yield across the four irrigated sites. Under dryland conditions at the Ohio site, Red Pontiac (300 cwt/A), MN16966 (291 cwt/A), and MSB106-7 (261 cwt/A) were the top three entries for total yield. MN16489 (354 cwt/A), W1313 (352 cwt/A), and MSB106-7 (349 cwt/A) were the top three entries for U.S. No. 1 yield under irrigation. Under dryland conditions (Ohio), Red Pontiac (246 cwt/A), MSB106-7 (193 cwt/A) and Red Norland (191 cwt/A) were the top three entries for U.S. No. 1 yield. (**North Central Regional Trial Tables 1 and 2**).

Percent U.S. No. 1: The range for percent U.S. No. 1 was 67% (Russet Burbank) to 93% (Red Norland). Of the selections, MN16489 had the highest percentage of U.S. No. 1 at 87%, followed closely by MSB076-2 and W1313 at 86%. (**North Central Regional Trial Table 3**).

Maturity: Red Norland was the earliest maturing entry while Russet Burbank was the latest maturing. Among selections, ND2676-10 was the earliest maturing and MN16489 the latest. (**North Central Regional Trial Table 4**).

Specific Gravities: W1313 had the highest specific gravity at 1.091, followed closely by MSB076-2 at 1.089. As expected, the lowest specific gravities were observed in the red cultivars and selections (1.060-62). Russet tablestock selections W1151rus and MSB106-7 had the next lowest gravities at 1.067. (**North Central Regional Trial Table 5**).

Scab Reaction: Scab ratings were taken and reported from six sites. Minnesota reported the most severe incidence with respect to area and type. The percentage of tubers displaying scab symptoms was highest in the red cultivars and selection with Red Norland at 21.5%, Red Pontiac at 19.8%, and ND2225-1R at 18.2%. A high incidence of scab also was reported for MN16489 (15.8%) and W1313 (16.5%). Scab incidence was lowest in MSB106-7 (0.6%) and W1348rus (0.3%). (North Central Regional Trial Table 6 and Scab column in North Central Regional Trial Table 7).

Summary of Grade Defects: Freedom from external defects ranged from a low of 60.7% (Russet Burbank) to 94.3% (Russet Norkotah), while freedom from internal defects ranged from 66.5% (Atlantic) to 95.0% (MSB073-2) (North Central Regional Trial Table 7).

Chip Color: Chip color results are reported as Agtron values or PCII Color Chart values. Tubers were chipped shortly after harvest. All chipping entries performed as well as Atlantic, Norchip and Snowden. As noted in 1996, MN16180 (classified as a tablestock entry) chipped well and could have potential as a dual-purpose cultivar. (North Central Regional Trial Table 8).

Overall Merit Ratings: The following summary shows the top five entries from 1997 and indicates the total points based on merit rating for these entries over the previous two years. (North Central Regional Trial Table 9).

Selection	Total Points		
	1995	1996	1997
W1313	NE	7	13
R. Norkotah	NE	4	12
ND2225-1R	14	6	12
MSB076-2	8	15	10
MN16489	NE	8	9
W1151rus	NE	0	7

*Not Entered

Summary of 3-year performance: MSB076-2 and ND2225-1R had their last trial year in 1997. For merit ratings during the three years, ND2225-1R ranked 5th, 6th (tied), and 2nd (tied), in 1995, 1996, and 1997 respectively. MSB076-2 during the same trials years ranked 6th, 1st, and 3rd. Yield comparisons of the two entries with check cultivars during the three years are shown in North Central Regional Trial Table 10.

North Central Regional Trial Table 1. Total Yield (cwt/acre) - 1997

Cultivar or Selection	MI^{1/}	MN^{1/}	NE^{1/}	OH^{2/}	WI^{1/}	Ave.^{3/}	IA^{2/}	ND^{2/}
Atlantic	302	368	204	152	423	290	152	101
Norchip	260	339	270	179	322	274	155	96
Red Norland	197	315	363	204	370	290	108	80
Red Pontiac	288	379	410	300	430	361	106	161
Russet Burbank	225	500	168	161	355	282	100	80
Russet Norkotah	203	375	312	184	264	268	55	95
Snowden	247	488	262	135	441	315	117	123
MN16180	232	462	347	217	379	327	174	107
MN16489	301	584	313	203	384	357	60	119
MN16966	313	613	213	291	474	381	178	103
MSB073-2	254	299	203	221	396	275	66	102
MSB076-2	314	363	329	221	423	330	88	98
MSB106-7	258	527	396	261	394	367	149	101
ND2225-1R	172	393	243	141	295	249	87	99
ND2676-10	249	373	287	223	344	295	130	104
ND3828-15	231	392	376	159	424	316	158	91
W1151rus	207	392	216	122	312	250	122	109
W1313	349	515	287	247	392	358	151	100
W1348rus	225	560	242	226	413	333	106	108
Average	254	434	287	203	382	311	119	104

^{1/} Irrigated

^{2/} Dryland

^{3/} IA and ND are not included in average

North Central Regional Trial Table 2. U.S. No. 1 Yield (cwt/acre) - 1997

Cultivar or Selection	MI	MN	NE	OH	WI	Ave.^{1/}	IA	ND
Atlantic	277	324	197	111	387	259	114	71
Norchip	209	303	258	133	266	234	86	48
Red Norland	172	295	346	191	342	269	32	44
Red Pontiac	256	353	394	246	364	323	53	110
Russet Burbank	131	473	142	24	289	232	8	30
Russet Norkotah	127	343	303	138	228	228	25	58
Snowden	192	439	252	115	401	280	37	88
MN16180	148	410	326	180	343	281	76	49
MN16489	265	529	291	160	332	315	3	70
MN16966	238	567	187	169	401	312	57	48
MSB073-2	172	208	165	168	356	214	30	50
MSB076-2	244	317	310	177	380	286	38	59
MSB106-7	186	504	371	193	335	318	62	67
ND2225-1R	100	305	203	104	260	194	4	60
ND2676-10	181	305	262	187	320	251	72	52
ND3828-15	173	368	359	121	357	276	88	45
W1151rus	136	366	184	81	272	208	45	74
W1313	313	466	268	163	359	314	60	66
W1348rus	124	518	223	156	357	276	53	52
Average	192	389	265	148	335	267	50	60

^{1/} IA and ND not included in average.

North Central Regional Trial Table 3. Average Percent U.S. No. 1 (over 2" Dia) - 1997

Cultivar or Selection	MI	MN	NE	OH	WI	Ave.^{1/}	IA	ND
Atlantic	92	88	97	73	91	88	75	70
Norchip	81	89	96	74	83	85	55	50
Red Norland	87	94	95	94	93	93	30	55
Red Pontiac	89	93	96	82	85	89	50	68
Russet Burbank	58	94	85	15	81	67	8	38
Russet Norkotah	63	91	97	75	86	82	46	61
Snowden	78	90	96	85	91	88	31	72
MN16180	64	88	94	83	91	84	44	46
MN16489	88	91	93	79	86	87	5	59
MN16966	76	92	88	58	85	80	32	47
MSB073-2	68	70	81	76	90	77	45	49
MSB076-2	78	88	94	80	90	86	43	60
MSB106-7	72	96	94	74	85	84	42	66
ND2225-1R	58	77	83	74	88	76	5	61
ND2676-10	73	81	91	84	93	84	55	50
ND3828-15	75	94	95	76	84	85	56	50
W1151rus	65	93	85	66	87	79	37	68
W1313	90	90	93	66	92	86	40	66
W1348rus	55	93	92	69	86	79	50	48
Average	74	89	92	73	88	83	39	57

^{1/} IA and ND not included in average.

North Central Regional Trial Table 4. Maturity Classification^{1/} - 1997

Cultivar or Selection	IA	MI	MN	NE	ND	OH	WI	Average
Atlantic	3.0	ND	3.5	2.5	4.3	4.0	3.0	3.4
Norchip	2.0	ND	3.0	3.0	3.8	3.5	2.5	3.0
Red Norland	1.0	ND	2.9	1.0	3.0	1.0	1.0	1.7
Red Pontiac	3.0	ND	3.0	4.0	4.3	4.0	4.0	3.7
Russet Burbank	5.0	ND	4.1	4.0	5.0	5.0	3.8	4.5
Russet Norkotah	4.0	ND	3.5	1.5	4.0	2.0	2.8	3.6
Snowden	2.5	ND	3.8	4.0	4.8	5.0	3.3	3.9
MN16180	2.0	ND	3.6	1.0	3.3	3.5	3.5	3.4
MN16489	5.0	ND	3.3	4.0	4.0	5.0	3.3	4.1
MN16966	2.0	ND	4.1	2.0	4.8	4.0	4.5	3.6
MSB073-2	4.0	ND	3.6	4.0	3.8	4.0	3.0	3.7
MSB076-2	2.5	ND	3.6	4.0	3.5	4.0	4.0	3.6
MSB106-7	3.0	ND	2.8	1.0	3.5	3.0	3.0	2.7
ND2225-1R	2.0	ND	2.8	1.5	3.8	4.0	1.5	2.6
ND2676-10	2.0	ND	2.5	1.0	3.3	3.0	2.5	2.4
ND3828-15	4.0	ND	3.5	2.0	4.0	3.0	2.8	2.7
W1151rus	3.0	ND	3.5	3.0	4.3	5.0	3.3	3.7
W1313	2.0	ND	4.1	3.0	5.0	5.0	3.5	2.9
W1348rus	4.0	ND	3.5	3.0	4.8	5.0	2.5	3.8
Average	2.9	ND	3.4	2.6	4.1	3.8	3.0	3.3

- ^{1/} 1. Very Early - Irish Cobbler Maturity 4. Late - Katahdin Maturity
2. Early - Norland Maturity 5. Very late - Russet Burbank Maturity
3. Medium - Red Pontiac Maturity

North Central Regional Trial Table 5. Specific Gravities - 1997^{1/}

Cultivar or Selection	IA	MI	MN	NE	ND	OH	WI	Average
Atlantic	72	89	78	85	88	75	84	82
Norchip	71	75	72	75	90	73	70	75
Red Norland	55	55	57	60	79	65	54	61
Red Pontiac	62	61	61	60	70	63	56	62
Russet Burbank	77	73	86	70	83	64	72	75
Russet Norkotah	64	66	67	70	79	65	62	68
Snowden	72	84	83	85	91	68	75	80
MN16180	67	65	67	70	87	70	76	72
MN16489	73	77	79	90	88	71	72	79
MN16966	75	87	79	75	86	70	79	79
MSB073-2	87	85	84	85	86	74	81	83
MSB076-2	85	94	84	100	94	80	85	89
MSB106-7	64	59	68	70	82	65	62	67
ND2225-1R	56	56	55	60	78	62	54	60
ND2676-10	71	74	70	75	87	69	73	74
ND3828-15	77	65	65	80	83	61	68	71
W1151rus	64	64	72	70	78	63	56	67
W1313	85	94	96	90	98	88	83	91
W1348rus	62	75	83	75	89	79	74	77
Average	70	74	74	76	85	70	70	74

^{1/} "88" is abbreviation for a specific gravity value of 1.088

North Central Regional Trial Table 6. Scab Reaction Report - Most Representative Scab (Area/type)^{1/} - 1997

Cultivar or Selection	IA	MI	MN	NE	ND	OH	WI
Atlantic	0-0	ND	1-4	1-4	T-3	0-0	T-3
Norchip	T-1	ND	1-4	—	T-1	0-0	T-1
Red Norland	3-5	ND	1-3	T-1	T-5	T-1	T-1
Red Pontiac	1-3	ND	2-5	1-3	T-1	0-0	1-3
Russet Burbank	0-0	ND	1-4	—	0-0	0-0	T-1
Russet Norkotah	T-1	ND	2-4	—	0-0	0-0	T-1
Snowden	0-0	ND	4-3	1-4	T-1	5-1	T-1
MN16180	0-0	ND	1-2	—	T-2	0-0	0-0
MN16489	T-1	ND	3-1	—	T-1	T-2	T-1
MN16966	0-0	ND	1-3	—	3-1	0-0	T-1
MSB073-2	T-1	ND	1-2	2-5	2-1	0-0	T-1
MSB076-2	T-1	ND	3-2	—	T-3	0-0	T-1
MSB106-7	0-0	ND	T-1	—	0-0	0-0	T-1
ND2225-1R	3-2	ND	1-4	T-1	2-3	0-0	T-2
ND2676-10	T-1	ND	1-1	1-4	T-1	T-1	0-0
ND3828-15	T-1	ND	1-3	—	T-1	0-0	T-1
W1151rus	2-2	ND	1-3	—	3-3	T-1	T-1
W1313	0-0	ND	2-4	1-4	T-3	2-1	T-4
W1348rus	0-0	ND	T-1	—	0-0	0-0	T-1

^{1/} Area Type
T = less than 1% 1 = Small, superficial
1 = 1-20% 2 = Larger, superficial
2 = 21-40% 3 = Larger, rough pustules
3 = 41-60% 4 = Larger pustules, shallow eyes
4 = 61-80% 5 = Very large pustules, deep holes
5 = 80-100%

North Central Regional Trial Table 7. Summary of Grade Defects - 1997.

Cultivar or Selection	Scab ^{2/}	External ^{1/}				Internal ^{1/}				
		Growth Cracks	Off Shape & Second Growth	Tuber Rot	Sun Green	Total Free of External Defects ^{3/}	Hollow Heart	Internal Necrosis	Vascular Discoloration	Total Free of Internal Defects ^{4/}
Atlantic	11.4	0.8	3.7	0.2	6.2	90.7	26.3	2.9	4.6	66.5
Norchip	7.5	8.8	14.5	0.2	8.2	78.7	4.6	6.1	9.0	80.5
Red Norland	21.5	6.3	4.7	0.0	1.7	88.8	5.7	8.1	4.3	83.5
Red Pontiac	19.8	5.8	10.5	0.0	1.8	84.2	9.6	1.4	5.1	83.9
Russet Burbank	2.5	3.8	35.0	0.0	1.5	60.7	12.1	5.3	2.9	78.7
Russet Norkotah	7.0	1.2	7.7	0.3	1.0	94.3	13.3	1.0	6.9	79.2
Snowden	9.4	0.3	4.7	0.2	7.0	88.7	9.9	2.3	16.1	71.7
MN16180	4.9	0.5	10.8	0.0	6.7	83.8	6.0	0.0	8.4	84.1
MN16489	15.8	2.5	4.8	0.0	5.8	90.5	6.9	0.4	2.6	90.3
MN16966	8.3	2.2	10.8	1.3	1.3	85.8	1.9	4.3	4.9	89.2
MSB073-2	6.8	3.0	2.8	0.0	4.0	91.8	1.0	0.1	4.0	95.0
MSB076-2	10.1	2.8	2.8	0.2	3.8	91.3	15.1	2.6	1.3	81.0
MSB106-7	0.6	7.0	9.7	0.0	3.8	79.7	2.4	4.7	9.9	84.7
ND2225-1R	18.2	0.3	2.5	0.0	1.0	89.8	0.7	1.6	7.8	88.9
ND2676-10	5.4	1.7	2.2	2.5	6.2	90.3	1.4	8.6	12.1	78.6
ND3828-15	6.3	6.8	4.5	0.2	6.7	83.7	9.4	6.7	11.9	72.3
W1151rus	11.2	3.3	9.7	1.0	3.3	84.5	11.0	0.6	11.9	76.7
W1313	16.5	1.0	1.8	0.5	3.8	91.2	7.1	3.0	4.1	84.5
W1348rus	0.3	1.7	13.8	0.0	3.3	82.7	8.4	1.1	2.6	88.7
Average	9.7	3.2	8.3	0.4	4.1	85.9	8.0	3.2	6.9	82.0

^{1/} Based on four 25 tuber samples (one from each replication). Percentage based on number of tubers.

^{2/} Number of tubers with scab of 100 tubers rated. Does not count in external defects.

^{3/} Tubers free from any external defect of any sort.

^{4/} Percentage of normal tubers showing no internal defects. Individual tubers may have more than one type of internal defect.

North Central Regional Trial Table 8. Chip Color - 1997

Cultivar or Selection	IA	MI ^{1/}	MN	NE ^{1/}	ND ^{2/}	OH		WI ^{1/}	Chart Average	Agtron Average
						Chart	Agtron			
Atlantic	ND	1.5	ND	1.0	47	1.0	57.0	3.0	1.6	52.0
Norchip	ND	1.5	ND	1.0	58	2.5	47.2	3.8	2.2	52.6
Red Norland	ND	3.0	ND	3.0	47	2.0	47.1	4.8	3.2	47.1
Red Pontiac	ND	3.0	ND	4.0	35	4.0	33.3	6.3	4.3	34.2
Russet Burbank	ND	2.0	ND	3.0	52	5.0	23.5	4.8	3.7	37.8
Russet Norkotah	ND	3.0	ND	2.0	40	3.0	40.5	4.4	3.1	40.3
Snowden	ND	1.0	ND	1.0	56	4.0	32.7	2.8	2.2	44.4
MN16180	ND	2.0	ND	1.0	60	2.0	50.0	3.2	2.1	55.0
MN16489	ND	1.0	ND	1.0	65	2.0	54.1	3.7	1.9	59.6
MN16966	ND	1.5	ND	2.0	43	2.0	51.2	4.2	2.4	47.1
MSB073-2	ND	1.5	ND	2.0	60	1.0	56.3	3.7	2.1	44.0
MSB076-2	ND	1.5	ND	1.0	60	4.0	31.0	3.2	2.4	45.5
MSB106-7	ND	3.0	ND	2.0	52	3.0	48.3	5.6	3.4	50.2
ND2225-1R	ND	3.0	ND	4.0	34	2.0	47.2	5.4	3.6	40.6
ND2676-10	ND	1.0	ND	1.0	65	4.0	31.3	3.1	2.0	48.2
ND3828-15	ND	1.5	ND	1.0	66	4.0	33.7	2.8	2.3	49.9
W1151rus	ND	3.0	ND	2.0	40	3.0	46.6	5.2	3.3	43.3
W1313	ND	1.5	ND	1.0	58	1.0	57.1	3.3	1.7	57.6
W1348rus	ND	2.0	ND	2.0	53	1.0	51.9	4.1	2.3	52.5
Average	ND	2.0	ND	1.8	52	2.7	44.2	4.1	2.6	47.5

^{1/} PCII Color Chart (1 = lightest; 10 = darkest)

^{2/} Agtron (Highest number lightest)

North Central Regional Trial Table 9. General Merit Rating^{1/} Points - 1997

Cultivar or Selection	IA	MI	MN	NE	ND	WI	Total Points
Atlantic		3					3
Norchip							
Red Norland				3			3
Red Pontiac							
Russet Burbank							
Russet Norkotah			2	2	5	3	12
Snowden			4				4
MN16180				1		4	5
MN16489		5		4			9
MN16966	1	1					2
MSB073-2							
MSB076-2		4		5	1		10
MSB106-7	5			1			6
ND2225-1R			3		4	5	12
ND2676-10			1		3	1	5
ND3828-15							
W1151rus	2		3		2		7
W1313	4	2	5			2	13
W1348rus	3						3

^{1/}	Merit Ratings	<u>Rating</u>	<u>Points</u>	1.	W1313 - 13 points
		1	5	2.	Russet Norkotah - 12 points
		2	4	2.	ND2225-1R - 12 points
		3	3	3.	MSB076-2 - 10 points
		4	2	4.	MN 16489 - 9 points
		5	1	5.	W1151rus - 7 points

North Central Regional Trial Table 10. Three-year summary of the yield and specific gravity of A. ND2225-1R and B. MSB076-2 relative to check cultivars in the North Central Regional Potato Variety Trial (1995-97).

A.	1995 ¹				1996				1997			
	U.S. #1 (cwt/acre)	% U.S. #1	% Total Solids	U.S. #1 (cwt/acre)	% U.S. #1	% Total Solids	U.S. #1 (cwt/acre)	% U.S. #1	U.S. #1 (cwt/acre)	% U.S. #1	Specific Gravity	Average U.S. #1
ND2225-1R	235	74	15.8	232	78	1.066	194	76			1.060	220
Norland ²	279	85	20.2	287	90	1.062	269	93			1.061	278
Red Pontiac	352	87	20.2	337	84	1.062	323	89			1.062	337

B.	1995 ³				1996				1997			
	U.S. #1 (cwt/acre)	% U.S. #1	% Total Solids	U.S. #1 (cwt/acre)	% U.S. #1	% Total Solids	U.S. #1 (cwt/acre)	% U.S. #1	U.S. #1 (cwt/acre)	% U.S. #1	Specific Gravity	Average U.S. #1
MSB076-2	280	82	20.3	334	84	1.089	286	86			1.089	300
Norchip	265	85	17.9	234	81	1.078	234	85			1.075	244
Atlantic	333	85	20.0	317	91	1.088	259	88			1.082	303
Snowden	331	88	19.3	282	74	1.083	280	88			1.080	298

¹1995 Yield data for ND2225-1R and check cultivars does not include the ND site.

²Dark Red Norland was used in 1995 and 1996; Red Norland was used in 1997.

³1995 Yield data for MSB076-2 and check cultivars is derived from MI, NE, and OH sites.

NORTHEAST REGIONAL POTATO TRIALS

**Jonathan A. Sisson III, Assistant Scientist,
University of Maine Agricultural and Forest
Experiment Station, Presque Isle, ME.**

Cooperators in 1997: Delaware, Ed Kee; Maine, Gregory Porter; New Brunswick, Henry DeJong; North Carolina, Craig Yench; New Jersey, Mel Henninger; Long Island, New York, Joe Sieczka; Upstate New York, Don Halseth; Ohio, Richard Hassell; Pennsylvania, William Lamont Jr.; Prince Edward Island, Walter Arsensault and Peter Scott; Quebec, Pierre Turcotte; and Virginia, Rikki Sterrett.

Twenty-three trials were conducted in eight states and three Canadian Provinces. Twenty-three named varieties and 21 numbered clones were available to the cooperators. Seed for all clones and varieties were grown by the Maine State Seed Potato Board at Porter Farm. Seedpieces were prepared, cut, and suberized by the staff at the University of Maine Agricultural and Forest Experiment Station in Presque Isle, Maine. Seed was distributed to cooperating locations according to requests received from individual cooperators. Cultural practices were generally similar to those used by commercial growers near each location.

Objectives: The objectives of this regional project are (1) to develop pest-resistant, early maturing, long-dormant varieties that will process from cold storage; (2) to evaluate new and specialty varieties developed in the Northeast; (3) to determine climatic effects on performance to develop predictive models for potato improvement; and (4) determine heritability/linkage relationships and improve the genetic base of tetraploid cultivated varieties.

Results: Total yield, marketable yield, specific gravity, tuber size, tuber defects, chip color results, boil and bake results are presented in Northeast Region Trial Tables 1-7. For round whites, AF1480-5, AF1615-1, B0766-3, NY102, NY103, Atlantic, Itasca, Katahdin, Kennebec, and Reba produced good yields in many locations. Of these ten selections, Atlantic, NY102, and B0766-3 had the highest specific gravities. Atlantic, Katahdin, Kennebec, Reba, AF1480-5, B0766-3, NY103, and Yukon Gold produced good sized tubers (2.5 to 4 inch diameter). Atlantic, AF1480-5, B0766-3 and Itasca had hollow heart problems in some locations. AF1615-1, NY103, Katahdin, and Kennebec were prone to sunburning in some trials. Reba and NY102 had few

external and internal problems.

For red clones, Chieftan produced the highest marketable yields in most trials and had the largest tubers. Cherry Red had the highest specific gravity but also had some hollow heart. Chieftan had both good boil and bake scores, while the others did not bake as well.

Century Russet yielded and sized similar to Russet Burbank in most trials. Russetting was very light or nonexistent on Century Russet tubers and it had some hollow heart problems. B1004-8 did poorly at most sites. B9922-11 produced the largest tubers in most trials and had a similar specific gravity to Russet Burbank.

MaineChip has produced the lightest chips over the years; however, the yields have been very low. ND2471-8 has chipped very well out of the field, but has done very poorly out of storage. B0564-8, NY102, NY103, Snowden, AF1427-7, AF1433-4, and NorValley have chipped well out of the field, and have usually chipped well out of warm storage. Reba has consistently chipped well both out of the field and out of warm storage. Monona has chipped very well after reconditioning. Reba, AF1424-7, AF1433-4, and W870 have also produced light chips after reconditioning.

If you would like a copy of the 1997 Northeast Potato Trials, contact Jonathan Sisson at sisson@maine.maine.edu.

Northeast Region Trial Table L. Total yields (cwt/acre) for 23 named varieties and 21 numbered clones grown at 15 locations in the Northeast United States and Eastern Canada.

Clone	DE	ME1 ¹	ME2 ¹	ME3 ¹	NB	NC	NY1 ²	NY2 ³	OH	PA	PEI	QU1 ⁴	QU2 ⁴	QU3 ⁴	VA	Mean
Round Whites																
Atlantic	338	264	234	330	372	238	462	506	251	355	360	197	432	452	245	344
Itasca		168	210	409	331	242	403	588		358		230	483	376		345
Katahdin	303	237	287	414	431	209	444	463	228	472	365	184	429	434	235	349
Kennebec		247	287	484	433	290	388	489	244	455	415	240	533	513		372
MaineChip		198	232					450		328						302
Monona		179	279					418		368						327
Niska		199	222		392	234		440		373		217	432	407		324
NorValley		247	273	449		201		423	250	397		222	425	397		328
Quaggy Joe		260		458		212		531	262	435						360
Reba (NY87)	322	251	250	452		191	419	493	272	407		177	395	351	278	338
Snowden		154	229	297		201		484	263	411		227	461	392	325	299
Superior	322	150	195	484	209	236	302	470	269	401	362	204	406	393	287	318
Yukon Gold		220	253		306	195	396	367	202	398	314	177	366	337		305
AF1424-6	225									321						285
AF1424-7	221	173	160	273	276	173		448	168	326	286	171	376	402		266
AF1425-1					401					327		169	409	390		339
AF1426-1	295									315						305
AF1433-4	269	172	176	339		172			190	287		199	336	310		245
AF1437-1	301	203		388		260	376	437	232	362		244	471	439		338
AF1475-16	326									379		201	425	358	278	328
AF1480-5		303		434	405	222	407	491	249	481	401	226	435	407		372
AF1565-12	332	205		385		182			221	300		162	345	389		280
AF1615-1	325	303		483		208	361	428	217	486		166	441	397		346
B0564-8		250	173		309	205	323	379	218	350	320	228	437	402	247	301
B0766-3		200	248		356	178	425		270	443	364		397	346		314
B0856-4		227		333	324	271			221	327		136	336	363	305	284
ND2471-8	339					220			165	340						266
NY102		213	254	390	399	222	372	449	234	340		221	415	416		327
NY103	382	254	236	422	443	248	427	455	235	378	359	260	399	432	297	348
W870	305				245					340						297

Northeast Region Trial Table 1 continued.

Clone	DE	ME1 ¹	ME2 ¹	ME3 ¹	NB	NC	NY1 ²	NY2 ³	OH	PA	PEI	QU1 ⁴	QU2 ⁴	QU3 ⁴	VA	Mean
Reds																
Cherry Red	186			391		255			206	392	307	194	419	371		302
Chieftain	262			469		274	371	515		470		222	516	456		395
Dark Red Norland	218			459		242	320		241	323					256	294
NorDonna	183			368		262	280	445	162	389						298
Red Ruby	209			360			363			383						329
B0811-13	205			407	338	209	338		214	390	316	158	452	434	242	309
Russets/Long Whites																
BelRus	139					195									221	185
Century Rus.	283			337		395	366	489	245	447					294	357
Russet Burbank	257			388	376			460		315	407					367
Russet Norkotah	222			343			256									274
Shepody												192	425	369		329
B1004-8	225	176		262	320	166	336	313	207	293	270	147	251	238		246
B9922-11	119	240		345		218	329	351	194	332					221	261
W1099Rus	236	261		416	339	240	314			291	336					304

¹Trials were conducted in three locations in Maine, Presque Isle (ME1), Exeter (ME2), and St. Agatha (ME3).²The two locations in New York were Riverhead, Long Island (NY1), and Freeville (NY2).³There were three trials in Quebec, Canada: Joliette (QU1), Shipshaw (QU2), and Ste-Croix (QU3).

Northeast Region Trial Table 2. Marketable yields (cwt/acre) for 23 named varieties and 21 numbered clones grown at 15 locations in the Northeast United States and Eastern Canada.

Clone	DE	ME1 ¹	ME2 ¹	ME3 ¹	NB	NC	NY1 ²	NY2 ³	OH	PA	PEI	QU1 ⁴	QU2 ⁴	QU3 ⁴	VA	Mean
Round Whites																
Atlantic	268	240	195	272	328	219	427	383	216	313	336	182	378	424	204	291
Itasca		122	190	374	285	232	335	511		308		198	427	337		302
Katahdin	220	208	246	283	390	200	385	347	178	418	352	161	392	407	200	295
Kennebec		211	240	408	338	276	304	266	188	411	403	214	500	474		314
MaineChip		157	170	353						289						242
Monona	149	219					365		328						275	
Niska		162	168		355	217		319		332		183	387	375		278
NorValley		195	211	394		189		313	190	345		212	371	358		278
Quaggy Joe		227		319		196		377	212	388						287
Reba (NY87)		223	207	411		172	383	423	237	359					332	297
Snowden	317	126	206	280		188		397	224	370		137	351	320	284	262
Superior	255	127	178	431	191	226	266	437	245	360	348	186	429	369	252	287
Yukon Gold		192	215		282	172	347	302	170	361	302	184	384	343		271
AF1424-6	195			245	262	159		409	141	283	261	157	326	349		246
AF1424-7	162	153	127		357					287		137	372	357		233
AF1425-1										282						302
AF1426-1	123			312		161			167	241		172	295	278		202
AF1433-4	217	123	156			238	302	387	202	307		219	436	416		212
AF1437-1	193	177		292						319		181	395	316	253	288
AF1475-16	268			389	336	197	305	344	147	440	386	206	404	383		289
AF1480-5		282		327		167			194	248		127	307	370		318
AF1565-12	224	175		433		193	295	306	177	437		131	387	356		238
AF1615-1	204	272				191	267	309	168	300	288		404	351	200	290
B0564-8		231	150		278	168	395		224	394	351	202	368	318		261
B0766-3		180	230		341	168			161	279		119	293	318	254	288
B0856-4		204		307	300	246			125	295						248
ND2471-8	281				205											226
NY102		173	236	368	382	214	316	392	204	294		186	374	387		294
NY103	301	226	208	340	394	233	381	340	217	337	343	238	346	405	270	305
W870	249				222					304						258

Northeast Region Trial Table 2 continued.

Clone	DE	ME1 ¹	ME2 ¹	ME3 ¹	NB	NC	NY1 ²	NY2 ³	OH	PA	PEI	QU1 ⁴	QU2 ⁴	QU3 ⁴	VA	Mean
Reds																
Cherry Red		163		289		243			183	350	292	175	393	347		271
Chieftain		243		432		261	338	390		431		204	485	443		359
Dark Red Norland		194		434		234	276		207	279					179	258
NorDonna		157		347		249	225	377	123	350						261
Red Ruby		178		299			312			331						280
B0811-13		161		374	325	194	283		180	343	292	116	419	403	180	273
Russets/Long Whites																
BelRus	46					182									117	115
Century Russet		243		299		384	190	339	145	393					211	276
Russet Burbank		238		365	221			251		259	286					270
Russet Norkotah		217		325			118									220
Shepody												164	364	325		284
B1004-8	95	168		245	292	153	161	214	153	244	133	164	193	190		185
B9922-11	41	233		301		211	240	245	146	292					186	211
W1099Rus	113	163		383	303	230	175			238	240					231

¹Trials were conducted in three locations in Maine, Presque Isle (ME1), Exeter (ME2), and St. Agatha (ME3).²The two locations in New York were Riverhead, Long Island (NY1), and Freeville (NY2).³There were three trials in Quebec, Canada; Joliette (QU1), Shipshaw (QU2), and Ste-Croix (QU3).

Northeast Region Trial Table 3. Specific gravities (1.0 excluded) for 23 named varieties and 21 numbered clones grown at 15 locations in the Northeast United States and Eastern Canada.

Clone	DE	ME1 ¹	ME2 ¹	ME3 ¹	NB	NC	NY1 ²	NY2 ³	OH	PA	PEI	QU1 ⁴	QU2 ⁴	QU3 ⁴	VA	Mean
<u>Round Whites</u>																
Atlantic	75	88	96	77	73	87	82	86	75	92	101	90	73	96	88	86
Itasca		71	77	67	64	77	66	74		74		72	67	81		72
Katahdin	62	75	79	70	65	80	65	72	63	80	81	74	68	81	63	72
Kennebec		77	89	71	65	83	69	77	70	82	97	78	70	83		78
MaineChip		92	99				91			98						95
Monona	68	78					65		72						69	
Niska		79	85		63	85		75		83		81	72	90		79
NorValley		78	83	71		82		78	69	80		79	72	83		77
Quaggy Joe		68		60		71		63	65	68						66
Reba (NY87)	69	73	81	68		76	71	69	72	78		86	83	97	72	73
Snowden		89	97	84		82		89	78	94		80	71	87	81	87
Superior	66	79	85	75	70	77	69	74	74	75	89	78	75	91	72	76
Yukon Gold		83	89		77	83	76	80	78	84	94	85	74	90		82
AF1424-6	69			75				91		88		89	62	83		81
AF1424-7	74	84	91		76	87			79	86	89	77	64	77		81
AF1425-1					65					76						82
AF1426-1	52									76						72
AF1433-4	66	77	81	69		73			72	86		77	62	83		64
AF1437-1	52	64		55		67	60	62	66	64		67	57	67		75
AF1475-16	67									73		82	56	74	76	62
AF1480-5		79		73	65	79	74	77	76	76	91	82	64	86		71
AF1565-12	59	76		64		69				70		77	53	72		77
AF1615-1	71	82		70		73	75	75	72	87		72	67	82		69
B0564-8		78	82		66	82	73	73	74	78	86	81	76	88	76	75
B0766-3		83	93		69	85	74		66	87	95	85	78	90		78
B0856-4		75		73	70	76			71	79		73	70	78	63	82
ND2471-8	76					87			78	89						73
NY102		87	97	80	72	88	81	84	79	88		83	80	93		83
NY103	65	77	80	70	62	79	70	72	64	74	83	76	67	80	64	84
W870	79				77					97						72

Northeast Region Trial Table 3 continued.

Clone	DE	ME1 ¹	ME2 ¹	ME3 ¹	NB	NC	NY1 ²	NY2 ³	OH	PA	PEI	QU1 ⁴	QU2 ⁴	QU3 ⁴	VA	Mean
<u>Reds</u>																
Cherry Red		81		72		86			74	80	94	79	73	87		81
Chieftain		66		62		68	66	66		73		66	59	74		67
Dark Red Norland		64		67		68	57		65	65					59	64
NorDonna		69		64		70	63	69	61	69						66
Red Ruby		66		62			63			69						65
B0811-13		69		66	64	97		75	73	78	86	77	57	74	70	74
<u>Russets/Long Whites</u>																
BelRus					83									77	80	78
Century Russet	81			65		81	76	84	79	90					70	81
Russet Burbank	81			71	69			85		87	95					72
Russet Norkotah	75			72			69									75
Shepody												76	71	78		78
B1004-8	82			75	72	74	74	82	69	86	92	73	68	88		78
B9922-11	87			75		80	81	89	78	91					76	82
W1099Rus	73			69	58	98	64			75	88					75

¹Trials were conducted in three locations in Maine, Presque Isle (ME1), Exeter (ME2), and St. Agatha (ME3).²The two locations in New York were Riverhead, Long Island (NY1), and Freeville (NY2).³There were three trials in Quebec, Canada; Joliette (QU1), Shipshaw (QU2), and Ste-Croix (QU3).

Northeast Region Trial Table 4. Percent of marketable yield of tubers in the 2.5 to 4 inch size range for round whites and reds, and russets greater than eight ounces for 23 named varieties and 21 numbered clones grown at 10 locations in the Northeast United States and Eastern Canada.

Clone	DE	ME1 ¹	ME2 ¹	ME3 ¹	NB	NY1 ²	NY2 ³	PA	PEI	VA	Mean
Round Whites											
Atlantic	41	25	63	67	68	65	60	65	67	73	56
Itasca		2	23	62	35	37	56	48			38
Katahdin	30	35	43	72	76	56	65	72	69	73	60
Kennebec		45	56	83	64	47	68	68	71		59
MaineChip		4	35				61	60		45	40
Monona	10	35				59	65				
Niska		2	31		61		49	47			38
NorValley		8	27	53			43	54			37
Quaggy Joe		11		66			52	62			48
Reba (NY87)	22	15	41	68		58	61	64		69	50
Snowden		9	29	53			35	54		68	41
Superior	30	3	35	75	57	52	40	62	73	73	50
Yukon Gold		42	52	68		60	63	71	61		60
AF1424-6	51							69			60
AF1424-7	29	12	19	73	55		56	61	60		46
AF1425-1					63			56			60
AF1426-1	20							76			48
AF1433-4	37	2	28	48				43			32
AF1437-1	23	6	60	59		39		54			40
AF1475-16	49							66		81	65
AF1480-5		48		64	58	39	61	70	56		57
AF1565-12	22	8		57				34			30
AF1615-1	10	22		54		18	40	55			33
B0564-8		17	9		46	37	43	48	40	63	38
B0766-3		11	45		71	69		68	61		54
B0856-4		17		36	50			43		63	42
ND2471-8	30							52			41
NY102		4	30	55	59	27	41	41			37
NY103	49	14	23	68	66	72	58	65	44	81	54
W870	39				47			64			50

Northeast Region Trial Table 4 continued.

Clone	ME1 ¹	ME3 ¹	NB	NY1 ²	NY2 ³	PA	PEI	VA	Mean
<u>Reds</u>									
Cherry Red	8	58				66	55		47
Chieftain	24	69		52	63	73			56
Dark Red Norland	9	62		35		50		16	34
NorDonna	7	57		30	42	59			39
Red Ruby	5	47		32		40			31
B0811-13	4	65	57	34		56	34	51	43
<u>Russets/Long Whites</u>									
BelRus									
Century Russet	12	33		9	37				23
Russet Burbank	13	30			43		15		25
Russet Norkotah	6	45		4					18
Shepody									
B1004-8	4	20		3	24		4		11
B9922-11	37	65		21	42				41
W1099Rus	14	53		8			15		23

¹Trials were conducted in three locations in Maine, Presque Isle (ME1), Exeter (ME2), and St. Agatha (ME3).

²The two locations in New York were Riverhead, Long Island (NY1), and Freeville (NY2).

Northeast Region Trial Table 5.

Average (sites x years) percent tuber defects and hollow heart, chip color, and bake and boil scores for 23 named and 21 numbered round white clones. Number of comparisons (sites x years) are in parentheses.

Variety	Years	Total	% Tuber Defects				Chip Color ¹				Recon- ditioned ⁴	Boil score ²	Bake score ²
			Sun- burn	Mis- shapen	Growth cracks	Hollow Heart	Out of field ³	50-55°F storage	45°F storage				
Atlantic	1997	12.9(10)	5.2(9)	2.5(9)	1.2(10)	4.6(13)	3 0 0	2 4 3	0 0 3	0 0 1	3 2 1	2 0 1	
Atlantic	8	8.2(51)	3.8(49)	2.0(52)	1.4(55)	6.4(60)	20 10 6	28 9 13	4 3 12	7 4 7	12 7 6	15 5 1	
Itasca	1997	5.3(5)	2.1(5)	1.8(5)	1.2(5)	5.1(7)	0 0 1	1 1 6	0 0 2		4 1 0	1 1 0	
Katahdin	1997	14.3(8)	7.1(7)	1.0(7)	0.3(8)	5.0(11)	0 2 0	0 1 4	0 0 3	0 0 1	4 2 0	2 1 0	
Katahdin	8	9.1(50)	5.2(48)	1.1(48)	0.6(50)	4.4(63)	6 6 14	3 8 20	0 1 16	1 1 10	10 15 1	9 10 3	
Kennebec	1997	17.6(7)	7.2(7)	3.1(7)	1.4(7)	3.3(10)	0 0 1	0 2 5	0 0 2	0 0 1	2 3 1	2 0 1	
Kennebec	8	14.7(39)	6.0(39)	3.9(39)	3.1(39)	3.8(50)	4 4 15	6 11 23	1 1 15	3 1 12	12 10 4	7 11 4	
MaineChip	1997	22.4(3)	5.2(3)	3.5(3)	1.8(3)	19.0(4)		3 0 0	1 0 1	1 0 0	0 0 1	0 0 1	
MaineChip	8	8.6(30)	4.0(30)	1.7(30)	1.6(30)	7.9(29)	9 1 1	28 1 1	7 1 2	5 2 3	3 6 1	2 5 2	
Monona	1997	13.1(4)	3.9(4)	2.8(4)	0.3(4)	5.5(5)		1 1 1	0 0 1		0 1 0	1 0 0	
Monona	4	10.4(12)	2.8(12)	4.2(12)	1.2(12)	2.5(13)	1 0 0	5 3 2	2 0 2	10 0 1	0 3 0	2 1 0	
Niska	1997	21.6(3)	2.9(3)	5.0(3)	4.0(3)	4.0(5)	1 0 0	3 2 2	0 0 3	1 0 0	5 0 0	2 0 0	
Niska	2	16.1(5)	3.8(5)	3.4(5)	3.2(5)	5.0(10)	4 2 0	5 4 4	1 0 4	1 1 0	7 1 0	4 0 0	
NorValley	1997	16.9(4)	5.1(4)	4.0(4)	0.7(4)	1.5(7)	2 0 0	2 2 3	0 1 1	0 0 1	4 0 0	1 0 0	
NorValley	4	11.9(14)	4.8(14)	4.2(14)	0.6(14)	0.5(20)	7 2 1	13 5 5	4 2 3	2 1 3	6 4 1	3 4 0	
Quaggy Joe	1997	16.1(3)	8.4(3)	2.6(3)	3.3(3)	4.2(6)	0 0 1	0 0 2	0 0 1		0 1 0	1 0 0	
Quaggy Joe	4	12.8(10)	7.6(10)	2.6(10)	1.6(10)	3.9(18)	0 0 10	0 3 11	0 0 8	0 0 4	4 4 0	5 2 0	
Reba	1997	6.6(7)	3.1(6)	1.3(6)	0.1(7)	3.8(10)	3 0 0	3 0 0	0 1 0	0 0 1	0 1 0	1 0 0	
Reba	6	5.0(35)	3.1(33)	0.9(33)	0.3(35)	4.0(44)	18 4 2	19 2 1	4 3 3	4 2 2	4 8 0	4 5 2	

Northeast Region Trial Table 5 cont.

Variety	Years	-----% Tuber Defects-----				-----Chip Color ¹ -----				Recon- ditioned ⁴	Boil score ²	Bake score ²
		Total	Sun- burn	Mis- shapen	Growth cracks	Hollow Heart	Out of field ³	50-55°F storage	45°F storage			
Snowden	1997	6.0(5)	2.8(4)	1.3(4)	0.7(4)	2.9(7)	3 0 0	3 1 3	0 0 2	0 1 0	2 0 2	1 0 0
Snowden	6	4.4(25)	2.3(24)	1.3(24)	0.3(24)	2.4(31)	15 3 1	15 6 6	3 2 3	3 1 1	5 2 6	5 2 3
Superior	1997	4.9(7)	1.4(6)	2.9(6)	0.4(7)	1.0(10)	1 1 1	1 2 5	0 0 3	0 0 1	3 2 1	2 0 1
Superior	8	4.2(40)	0.8(38)	2.1(38)	1.0(40)	1.3(57)	12 6 17	7 7 19	0 2 14	0 2 9	11 10 5	9 9 3
Yukon Gold	1997	16.4(5)	2.1(5)	3.6(5)	0.6(5)	6.0(8)		0 1 4	0 0 2	0 0 1	3 3 0	2 1 0
Yukon Gold	8	7.5(17)	1.5(17)	2.0(17)	1.0(17)	9.1(24)	2 0 4	1 2 11	0 1 3	0 0 2	4 6 1	4 3 0
AF1424-6	1997				0.0(1)	7.5(2)		1 2 1	0 0 2	0 0 1	2 2 0	1 0 0
AF1424-6	4	7.4(5)	2.7(5)	0.6(5)	3.3(6)	5.3(8)	1 3 0	9 6 2	2 1 5	2 1 2	5 4 0	4 1 0
AF1424-7	1997	14.7(5)	1.7(5)	2.2(5)	0.3(6)	3.3(9)	2 0 0	6 1 2	0 1 2	0 1 0	4 2 0	2 0 1
AF1424-7	4	9.9(10)	1.5(10)	1.3(10)	1.3(12)	2.1(19)	9 1 1	15 4 5	5 1 5	2 3 0	6 4 0	5 1 1
AF1425-1	1997					5.0(1)		0 2 0	0 0 2	0 0 1	2 2 1	0 2 0
AF1425-1	4	9.5(6)	7.5(6)	0.9(6)	1.0(6)	0.8(9)	1 1 0	3 2 2	1 0 4	1 0 2	2 3 1	0 3 0
AF1426-1	1997				6.0(1)	7.5(2)		0 2 0	0 0 2		1 0 0	1 0 0
AF1426-1	5	14.8(7)	4.8(7)	5.2(7)	4.2(9)	1.5(14)	3 1 2	7 3 2	0 1 6	1 1 2	2 3 0	3 1 0
AF1433-4	1997	17.1(3)	0.4(3)	3.6(3)	0.0(4)	0.0(7)	2 0 0	3 2 2	0 0 2	1 0 0	3 1 0	1 0 0
AF1433-4	5	6.9(15)	2.0(15)	1.8(15)	0.6(17)	1.3(22)	6 2 2	13 6 3	1 2 4	4 0 1	6 3 3	4 3 2
AF1437-1	1997	10.7(4)	1.2(4)	0.2(4)	3.2(5)	0.6(8)	1 0 0	0 1 1	0 0 1		2 1 1	1 0 0
AF1475-16	1997	2.0(1)			1.0(1)	20.0(2)	1 0 0	0 0 1	0 0 2	0 0 1	2 2 0	1 0 0
AF1475-16	3	8.4(2)	10.1(1)	4.1(1)	0.4(3)	11.0(4)	1 0 1	0 0 3	0 0 3	0 0 1	2 3 0	1 1 0

Northeast Region Trial Table 5 cont.

Variety	Years	-----% Tuber Defects-----				-----Chip Color ¹ -----						
		Total	Sun- burn	Mis- shapen	Growth cracks	Hollow Heart	Out of field ³	50-55°F storage	45°F storage	Recon- ditioned ⁴	Boil score ²	Bake score ²
AF1480-5	1997	10.7(5)	3.7(5)	5.1(5)	0.1(5)	15.0(8)	0 1 0	0 2 2	0 0 3	0 0 1	2 1 3	1 1 1
AF1480-5	2	9.3(6)	3.4(6)	4.4(6)	0.1(6)	17.0(11)	2 1 2	1 2 3	0 0 4	0 0 1	2 2 3	1 2 1
AF1565-12	1997	6.8(2)	3.8(2)	2.2(2)	0.1(3)	1.7(6)	1 0 0	0 2 0	0 0 2	0 0 1	1 3 0	1 0 0
AF1565-12	3	9.8(7)	3.4(7)	2.0(7)	3.2(9)	2.2(15)	5 0 3	3 3 4	0 1 4	0 1 2	1 5 0	1 2 0
AF1615-1	1997	8.1(4)	6.5(4)	1.1(4)	0.3(5)	2.5(8)	0 1 0	0 1 1	0 0 1		1 1 2	1 0 0
B0564-8	1997	4.09(6)	1.2(5)	0.6(5)	0.2(5)	0.0(8)	1 2 0	3 2 2	0 0 3	0 0 1	5 0 1	2 0 1
B0564-8	5	3.5(17)	6(16)	0.4(16)	1(17)	1.5(24)	12 5 0	6 7 6	2 0 6	1 1 3	8 2 2	5 2 1
B0766-3	1997	6.1(4)	0.6(4)	2.1(4)	0.0(4)	7.1(7)	2 0 0	4 3 1	0 1 1		4 1 1	2 1 0
B0856-4	1997	2.3(3)	1.1(2)	0.9(2)	0.3(2)	3.0(5)	1 1 0	0 2 1	0 0 2		4 1 0	2 0 0
ND2471-8	1997				0.0(1)	6.9(4)	2 0 0	0 1 0	0 0 2	0 0 1	0 1 0	0 1 0
ND2471-8	4	10.0(8)	5.8(8)	1.0(8)	1.7(9)	6.8(17)	11 1 1	1 4 11	3 0 5	0 1 3	3 4 0	2 3 1
NY102	1997	7.6(5)	1.5(5)	0.9(5)	1.2(5)	1.9(8)	2 0 0	3 3 1	1 1 1	1 0 0	2 1 2	1 1 0
NY102	2	7.1(8)	2.5(8)	0.9(8)	0.9(8)	3.3(13)	3 0 0	5 5 3	1 1 3	1 0 1	4 2 2	1 2 1
NY103	1997	11.9(7)	4.8(6)	2.5(6)	0.4(7)	0.5(10)	2 1 0	2 4 2	0 0 3	0 1 0	3 1 2	2 1 0
NY103	2	13.0(10)	7.2(9)	2.4(9)	0.5(11)	1.1(16)	5 1 0	4 6 4	1 0 4	0 1 1	5 2 2	3 2 0
W870	1997				0.0(1)	5.0(2)		1 1 0	0 1 2	0 1 0	2 0 0	1 1 0
W870	3	9.7(4)	4.4(4)	4.4(4)	0.5(5)	2.8(10)	4 2 3	7 4 2	2 1 4	3 3 0	5 0 1	3 2 0

¹From left-to-right, the scores are good, borderline, and poor.²From left-to-right, the scores are good, fair, and poor.³Out of field samples were fried three to twelve days after harvest in New Jersey, North Carolina and Virginia.⁴Chips were reconditioned in Maine's, Upstate New York's, and New Brunswick's trials.

Northeast Region Trial Table 6. Average (sites x years) percent tuber defects and hollow heart, chip color, and bake and boil scores for 5 named and 1 numbered red skinned clones. Number of comparisons (sites x years) are in parentheses.

Variety	Years	-----% Tuber Defects-----				-----Chip Color ¹ -----					Recon- ditioned ⁴	Boil score ²	Bake score ²
		Total	Sun- burn	Mis- shapen	Growth cracks	Hollow Heart	Out of field ³	50-55°F storage	45°F storage				
Cherry Red	1997	9.4(3)	1.3(3)	1.6(3)	1.3(3)	6.4(3)	0 0 1	0 1 2	0 0 1			2 1 1	0 0 1
Cherry Red	3	9.2(9)	2.1(9)	1.9(9)	3.0(9)	9.1(15)	0 0 1	0 3 8	0 0 7		0 0 2	3 4 2	1 4 1
Chieftain	1997	6.0(4)	1.9(4)	1.1(4)	2.4(4)	2.1(6)		0 0 2	0 0 1			2 0 1	
Chieftain	8	3.2(20)	1.1(19)	1.0(21)	0.9(20)	0.9(26)	1 0 2	0 2 11	0 0 3			7 2 1	4 2 0
NorDonna	1997	3.3(4)	1.6(4)	.09(4)	0.2(4)	0.0(7)	0 0 1	0 0 2	0 0 1				
NorDonna	3	3.1(9)	1.7(9)	0.8(9)	0.2(9)	0.9(16)	0 0 1	1 0 9	0 0 5		0 0 2	2 2 0	0 3 1
Norland, Dk Red	1997	2.1(4)	0.4(3)	1.0(3)	0.3(3)	0.0(6)	0 1 0	1 0 1	0 0 1				
Norland, Dk Red	5	3.0(13)	0.5(12)	1.4(12)	0.9(12)	1.3(22)	2 1 4	1 4 5	0 0 2			2 2 1	2 2 1
Red Ruby	1997	6.2(3)	2.1(3)	3.2(3)	0.8(3)	0.6(4)		0 0 2	0 0 1				
Red Ruby	3	5.7(9)	1.4(9)	3.1(9)	1.0(9)	1.1(14)		1 0 10	0 0 5		0 0 2	2 2 1	0 3 2
B0811-13	1997	2.7(5)	0.9(4)	2.2(4)	0.2(4)	0.4(7)	1 0 0	1 2 1	0 0 1			3 1 1	0 0 2

¹From left-to-right, the scores are good, borderline, and poor.

²From left-to-right, the scores are good, fair, and poor.

³Out of field samples were fried three to twelve days after harvest in New Jersey, North Carolina and Virginia.

⁴Chips were reconditioned in Maine's, Upstate New York's, and New Brunswick's trials.

Northeast Region Trial Table 7.

Average (sites x years) percent tuber defects and hollow heart, chip color, and bake and boil scores for 5 named and 3 numbered russet/long white clones. Number of comparisons (sites x years) are in parentheses.

Variety	Years	Total	-----% Tuber Defects-----			-----Chip Color ¹ -----				Recon- ditioned ⁴	Boil score ²	Bake score ²
			Sun- burn	Mis- shapen	Growth cracks	Hollow Heart	Out of field ³	50-55°F storage	45°F storage			
BelRus	1997	2.0(1)										
BelRus	8	3.6(18)	1.3(17)	2.0(20)	0.2(18)	5.7(22)		0 1 3	0 0 4	0 0 4	1 1 0	2 0 0
Century Russet	1997	13.4(5)	3.0(4)	5.7(4)	0.5(4)	9.6(7)	0 0 1	0 1 2	0 0 3	0 0 1	0 1 0	1 0 0
Century Russet	3	10.6(9)	2.5(8)	5.0(8)	0.4(8)	8.1(13)	0 0 1	0 2 5	0 0 5	0 0 2	1 2 0	1 1 0
Russet Burbank	1997	11.9(4)	1.4(4)	9.1(4)	1.4(4)	5.5(5)		0 1 2	0 0 1	0 0 1	1 0 2	0 3 0
Russet Burbank	8	16.5(36)	1.3(36)	13.7(36)	1.3(36)	9.9(42)	0 1 0	1 3 12	0 0 10	0 0 9	10 4 3	7 10 0
Russet Norkotah	1997	5.0(3)	1.1(3)	2.3(3)	0.2(3)	1.0(3)		0 0 2	0 0 1			
Shepody	1997										3 0 0	
B1004-8	1997	7.7(5)	1.1(5)	1.1(5)	2.5(5)	0.6(8)	0 0 1	0 0 4	0 0 3		4 0 2	2 1 0
B9922-11	1997	10.1(5)	2.6(4)	4.0(4)	1.3(4)	7.1(7)	0 1 0	0 1 2	0 0 3	0 0 1	0 0 1	1 0 0
B9922-11	7	7.4(25)	1.9(23)	3.1(24)	2.0(23)	3.6(31)	0 1 0	1 3 10	0 2 9	0 0 7	4 3 6	7 3 1
W1099Rus	1997	14.2(4)	1.4(4)	2.6(4)	1.3(4)	5.0(6)		0 0 4	0 0 4	0 0 1	1 0 2	0 3 0
W1099Rus	2	10.7(6)	1.4(6)	2.3(6)	1.2(6)	6.3(10)		0 0 5	0 0 4	0 0 1	2 0 2	0 3 0

¹From left-to-right, the scores are good, borderline, and poor.

²From left-to-right, the scores are good, fair, and poor.

³Out of field samples were fried three to twelve days after harvest in New Jersey, North Carolina and Virginia.

⁴Chips were reconditioned in Maine's, Upstate New York's, and New Brunswick's trials.

WESTERN REGIONAL POTATO VARIETY TRIAL

J. J. Pavék, D. L. Corsini, and Cooperators

Uniform Potato Yield Trial

The 1997 trial was grown at twelve locations for yield; disease data are from three of the locations. Eighteen entries, 14 experimental, three standard checks, and one early check, were grown. Three locations grew entries for both early and late harvest. The trial locations, dates of planting, vine killing, and harvest, and

days from planting to vine-kill/harvest are shown below. Cultural practices and the use of fertilizer, herbicides, pesticides, and vine killing varied according to local needs. Trial plots at all locations were irrigated on a regular schedule throughout the entire growing season according to plant needs. The growing season was cooler and wetter than normal across the region.

Pavék, Breeder, and Corsini, Pathologist, USDA-ARS, Univ. of Idaho, PO Box AA, Aberdeen, ID 83210. Cooperators: California, R. Voss; Colorado, D. Holm; Idaho, S. Love; New Mexico, C. Owen, R. Baker; Oregon, A. Mosley, D. Hane, K. Rykbost, C. Shock, S. James; Texas, D. Scheuring, J. C. Miller, Jr.; Washington, R. Thornton, N. Fuller, C. Brown.

Data on vines, tubers, yield, internal quality, disease reactions, merit scores, and disposition are presented in Western Tables 1 through 7. Three clones finished three years of testing, and will be tested further locally. Two clones were dropped, and the rest will continue in testing. The five Russet Norkotah strains showed much promise for fresh use; AO87277-6 was at the top for processing quality.

State	Location	Planting Date	Vine-Kill Date	Harvest Date	Days to Vine-Kill/ Harvest
California	Kern Co.	2/14	---	6/25	---/131
"	Tulelake	5/14	9/20	9/30	129/139
Colorado	San Luis Valley	5/21	9/8	10/1	110/133
Idaho	Aberdeen	4/28	9/3	6/17	128/142
"	Kimberly-Early	4/22	8/6	8/12	106/112
"	Kimberly-Late	4/22	---	10/8	---/169
New Mexico	Clovis	3/25	7/17	7/30	114/127
"	Farmington	4/23	---	10/15	---/175
Oregon	Hermiston-Early	3/20	7/14	7/25	116/127
"	Hermiston-Late	4/22	9/16	10/8	147/169
"	Klamath Falls	5/19	9/2	9/29	106/133
"	Malheur	5/5	9/5	9/15	123/133
Texas	Springlake	3/25	7/6	7/27	113/124
Washington	Othello-Early	4/9	8/8	8/26	121/139
"	Othello-Late	4/16	9/3	9/30	150/167

Western Table 1. 1997 Seed source, stand, tuber and vine characteristics, and foliar and tuber diseases at Aberdeen, ID.^{1/}

Entry	Year in	Seed (8 loc)	Stand %	Tuber			Vine		Vert.		Early Blight		Common		Necrosis		PLRV		Late Blight - MV	
				Shape	Skin	Size	Mat	Wilt	Fol.	Tub.	Scab	Hrm	KIM	Hrm	Fol.	Tuber				
RUSSET BURBANK	-	OR	99	L	RUS	ML	ML	S	MS	R	R	R	S	MS	VS	VS	MR	VS	MR	
RANGER RUSSET	-	OR	98	L	RUS	M	ML	MR	MS	MS	MS	MS	MR	MS	S	VS	R	VS	R	
RUSSET NORKOTAH	-	OR	98	L	RUS	S	E	VS	VS	R	R	R	MR	R	S	VS	MS	VS	MS	
A82360-7	3	OR, ID	99	O	RUS	L	L	R	MR	R	R	R	R	MR	MR	MR	R	MR	R	
A8792-1	2	OR	98	O	RUS	M	M	MR	MS	MR	R	MS	VS	MS	MS	MS	S	MS	S	
AC87084-3	1	CO	93	O	RUS	L	ML	MR	MR	S	R	MS	MR	MR	MR	MS	R	MS	R	
AO87277-6	1	OR	97	L	RUS	M	ML	S	S	R	R	MR	R	MR	MS	VS	R	VS	R	
CO85026-4	3	OR	96	L	RUS	M	ML	R	MR	R	R	MS	VR	MR	MR	MS	R	MS	R	
CO87009-4	1	CO	96	O	RUS	ML	M	S	S	R	R	R	R	MR	MS	S	R	MS	R	
CORN-3 ^{2/}	1	CO	98	L	RUS	S	E	S	S	R	R	MS	MR	MS	S	S	S	S	S	
CORN-8 ^{2/}	1	CO	98	L	RUS	S	E	S	S	R	R	R	MR	R	MS	VS	S	VS	S	
NDD840-1	1	CA	96	L	RUS	ML	ML	MS	S	R	R	MS	VR	--	-	S	MR	S	MR	
TX1385-12RU	2	OR	97	O	RUS	ML	M	MR	S	S	S	MR	VR	R	MR	VS	R	VS	R	
TXAV657-27RU	3	OR	97	O	RUS	ML	ML	S	S	R	R	MS	MS	MR	S	S	MR	S	MR	
TXNS112 ^{2/}	2	TX	98	L	RUS	S	E	S	S	R	R	R	MS	R	MR	VS	MR	VS	MR	
TXNS223 ^{2/}	1	TX	99	L	RUS	S	E	S	S	R	R	R	S	MR	MS	VS	S	VS	S	
TXNS278 ^{2/}	2	TX	97	L	RUS	S	E	VS	S	R	R	R	MS	R	MR	S	MR	S	MR	
SHEPODY	-	OR, ID	98	O	WHT	M	M	S	S	R	R	VS	VS	--	-	VS	MR	VS	MR	

^{1/} Shape: L = long, O = oblong, R = round; Vine size: L = large, ML = medium-large; M = medium, MS = medium-small, S = small; Mat = maturity;

L = late, ML = medium-late, M = medium, ME = medium-early, E = early; Disease reaction: R = resistant, VR = very resistant, MR = moderately

resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible, MV = Mount Vernon.

^{2/} RUSSET NORKOTAH selections.

Western Table 2. 1997 Total tuber yield, cwt/acre; early harvest and late harvest.^{1/}

Entry	Early Harvest								Late Harvest							
	Calif				Texas				Calif				Idaho			
	Km	Kim	NMex	Clv	Hrm	Oreg	Hrm	Spr	Wash	Oth	Mean	Tul	Slv	Colo	Ab	Kim
RUSSET BURBANK	536	429	150	453	235	612	403	442	468	485	589	431	602	560	580	685
RANGER RUSSET	613	362	210	439	222	526	395	582	-	512	559	548	678	635	529	755
RUSSET NORKOTAH	355	362	159	463	188	610	356	449	385	363	494	449	470	471	409	660
A82360-7	-	-	-	-	-	-	-	685	552	632	785	675	896	663	714	716
A8792-1	578	399	153	445	156	576	384	718	-	534	766	533	752	663	575	634
AC87084-3	651	381	172	477	147	618	408	439	494	455	670	133	671	617	491	573
AO87277-6	536	471	211	495	148	598	410	535	-	444	613	481	742	596	532	717
CO85026-4	462	260	125	301	210	501	310	473	402	264	414	215	638	512	405	562
CO87009-4	419	455	131	501	126	634	378	507	420	422	505	333	643	561	534	652
CORN-3	619	448	166	484	230	591	423	614	473	468	618	454	866	658	569	605
CORN-8	550	415	149	504	184	566	395	477	416	413	485	434	692	619	514	693
NDD840-1	515	-	-	-	-	-	515	392	-	459	657	378	717	517	631	623
TX1385-12RU	470	423	216	497	225	770	433	563	369	457	533	511	737	560	648	897
TXAV657-27RU	614	497	175	512	271	718	464	642	466	577	537	436	731	593	536	796
TXNS112	-	460	167	479	275	591	394	574	433	456	551	368	732	581	511	739
TXNS223	-	389	146	522	235	609	380	-	417	459	599	394	732	561	535	735
TXNS278	-	378	181	468	203	586	363	479	393	391	435	443	655	496	538	710
SHEPODY	-	413	-	499	206	575	423	-	445	-	-	-	-	-	-	445
Location Means	534	409	167	471	204	605	402	535.5	437.5	458.3	577.1	424	703	580	544	685

^{1/} Km = Kern. Co., Kim = Kimberly, Clv = Clovis, Hrm = Hermiston, Spr = Springlake, Oth = Othello, Tul = Tulelake, Slv = San Luis Valley,

Ab = Aberdeen, Frm = Farmington, Mal = Malheur County.

Western Table 3. 1997 U.S. No. 1's, percent of total yield for locations; overall mean, percent and cwt/acre; early and late harvest.

Entry	Early Harvest										Late Harvest																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	Calif					Wash					Mean					Calif					Colo					Idaho					NMex					Oregon					Wash					Mean																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	Krm		Kim		Clv	Oregon		Hrm	Spr	Oth	%		cwt/A		Tul	Slv	Ab	Kim	Frm	Hrm	Klm	Mal	Oth	%		cwt/A	Tul	Slv	Ab	Kim	Frm	Hrm	Klm	Mal	Oth	%		cwt/A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

Western Table 4. 1997 U.S. No.1's over 12 oz, percent of total yield for locations; percent and cwt/acre for means; early and late harvest.

Entry	Early Harvest										Late Harvest																										
	Calif					Texas					Wash		Mean		Calif					Colorado		Idaho					NMex		Oregon					Wash		Mean	
	Krn	Idaho	Kim	Clv	NMex	Oregon	Hrm	Spr	Oth	Wash	%	cwt/A	Tul	Slv	Ab	Kim	Frm	Hrm	Klm	Mal	Oth	%	cwt/A	Tul	Slv	Ab	Kim	Frm	Hrm	Klm	Mal	Oth	%	cwt/A			
RUSSET BURBANK	14	14	1	2	0	12	7	36	10	11	17	14	9	15	10	11	11	11	12	64																	
RANGER RUSSET	46	34	6	24	3	33	24	117	16	-	32	49	5	46	24	26	27	28	172																		
RUSSET NORKOTAH	22	23	0	13	3	36	16	75	18	11	14	35	5	26	35	14	30	21	101																		
A82360-7	-	-	-	-	-	-	-	-	10	12	24	19	5	15	25	13	15	15	107																		
A8792-1	32	13	14	30	3	36	21	101	51	-	37	53	7	43	34	36	26	36	237																		
AC87084-3	36	9	1	10	0	23	13	77	28	21	51	36	14	52	25	29	23	31	166																		
AO87277-6	24	18	2	18	11	37	18	90	7	-	24	28	1	31	28	22	23	21	125																		
CO85026-4	30	12	5	12	0	23	14	54	21	25	16	43	4	40	38	26	36	28	131																		
CO87009-4	14	5	1	7	0	15	7	36	3	2	9	10	0	20	9	14	10	9	49																		
CORN-3	49	34	4	25	3	36	25	134	47	49	41	41	6	60	39	32	30	38	236																		
CORN-8	51	28	3	27	3	32	24	120	37	39	29	39	9	49	41	29	42	35	191																		
NDD840-1	14	-	-	-	-	-	14	71	1	-	22	37	0	24	29	18	9	17	105																		
TX1385-12RU	32	29	19	41	9	57	31	163	42	22	46	48	21	69	31	32	52	40	250																		
TXAV657-27RU	47	17	9	40	4	35	25	143	36	14	39	45	11	44	36	32	43	33	208																		
TXNS112	-	29	1	15	0	32	15	79	32	30	24	44	7	39	26	23	29	28	162																		
TXNS223	-	17	1	11	2	38	14	73	-	32	22	36	2	39	15	13	29	24	140																		
TXNS278	-	32	1	15	4	35	18	82	34	37	19	32	7	39	24	25	35	28	145																		
SHEPODY	-	38	-	56	1	43	34	171	-	33	-	-	-	-	-	-	-	33	147																		
Location means	32	22	7	22	3	33	19	90	25	24	27	36	7	38	28	23	28	26	152																		
U.S. No. 1's over 3".																																					

U.S. No. 1's over 3".

Western Table 5. 1997 Specific gravity of tubers; early and late harvest .

Entry	Early Harvest						Late Harvest										
	Calif			Wash			Calif		Idaho		NMex		Oregon			Wash	
	Krn	Kim	Hrm	Spr	Oth	Mean	Tul	Slv	Ab	Kim	Frm	Hrm	KJm	Mal	Oth	Mean	
RUSSET BURBANK	1.089	1.073	1.090	1.066	1.077	1.079	1.089	1.088	1.086	1.082	1.087	1.077	1.084	1.075	1.068	1.082	
RANGER RUSSET	1.080	1.075	1.088	1.072	1.075	1.078	1.082	-	1.087	1.084	1.093	1.084	1.085	1.093	1.073	1.085	
RUSSET NORKOTAH	1.073	1.072	1.072	1.059	1.072	1.070	1.081	1.079	1.077	1.071	1.083	1.065	1.070	1.071	1.065	1.073	
A82360-7	-	-	-	-	-	-	1.092	1.103	1.093	1.094	1.088	1.077	1.086	1.086	1.071	1.088	
A8792-1	1.087	1.079	1.092	1.066	1.082	1.081	1.094	-	1.094	1.092	1.092	1.082	1.090	1.094	1.072	1.089	
AC87084-3	1.086	1.078	1.096	1.071	1.081	1.082	1.095	1.101	1.090	1.085	1.090	1.080	1.094	1.097	1.072	1.089	
AO87277-6	1.091	1.080	1.091	1.069	1.082	1.083	1.093	-	1.091	1.084	1.093	1.083	1.089	1.091	1.072	1.087	
CO85026-4	1.087	1.073	1.091	1.061	1.075	1.077	1.084	1.085	1.080	1.080	1.084	1.077	1.082	1.086	1.070	1.081	
CO87009-4	1.088	1.086	1.100	1.070	1.087	1.086	1.089	1.093	1.098	1.091	1.096	1.087	1.087	1.095	1.079	1.091	
CORN-3	1.077	1.073	1.087	1.065	1.071	1.075	1.077	1.085	1.078	1.074	1.086	1.068	1.076	1.076	1.063	1.076	
CORN-8	1.077	1.074	1.084	1.063	1.071	1.074	1.079	1.081	1.075	1.071	1.085	1.068	1.074	1.070	1.066	1.074	
NDD840-1	1.088	-	-	-	-	1.088	1.077	-	1.079	1.078	1.086	1.075	1.073	1.082	1.065	1.077	
TX1385-12RU	1.077	1.073	1.084	1.062	1.072	1.074	1.081	1.089	1.082	1.072	1.091	1.072	1.076	1.082	1.067	1.079	
TXAV657-27RU	1.078	1.078	1.084	1.070	1.069	1.076	1.079	1.092	1.079	1.080	1.091	1.073	1.074	1.080	1.068	1.080	
TXNS112	-	1.073	1.079	1.061	1.070	1.071	1.072	1.077	1.076	1.072	1.082	1.068	1.069	1.071	1.065	1.072	
TXNS223	-	1.073	1.078	1.063	1.069	1.071	-	1.080	1.078	1.075	1.084	1.067	1.071	1.071	1.065	1.074	
TXNS278	-	1.074	1.078	1.062	1.071	1.071	1.076	1.079	1.079	1.070	1.082	1.066	1.070	1.072	1.063	1.073	
SHEPODY	-	1.069	1.086	1.070	1.071	1.074	-	1.082	-	-	-	-	-	-	-	1.082	
Location Means	1.082	1.075	1.086	1.066	1.075	1.076	1.084	1.088	1.084	1.080	1.088	1.075	1.080	1.082	1.069	1.081	

Western Table 6. 1997 External and internal defects, french fry color, sugar ends, dextrose, vitamin C, and glycoalkaloids.

U.S. No.2														
Entry	& Culls		Culls <4 oz %	Growth Cracks (7 loc) ²	Shatter Bruise (5 loc)	Hollow Heart %	Black- Spot (5 loc) ⁴	Solids			Dextrose YSI % DWB ⁷	Vit.C Mg/100g FWB ⁷	Glyco- alkaloids mg/100FWB ⁷	
	>4 oz %	% ¹						Fry Color ⁵	Oven Dry %	% ⁶				
RUSSET BURBANK	21.0	14.0	14.0	3.9	4.1	15	3.7	1.6	22	0.11	21.5	2.4		
RANGER RUSSET	14.0	6.0	6.0	4.7	4.2	1	3.9	1.4	21	0.19	29.9	2.9		
RUSSET NORKOTAH	5.0	10.0	10.0	5.0	4.5	2	3.7	2.2	19	0.18	19.5	1.9		
A82360-7	9.0	12.0	12.0	4.2	4.1	0	3.4	1.4	23	0.12	21.9	1.1		
A8792-1	15.0	6.0	6.0	3.4	4.0	6	3.7	0.9	23	0.13	16.6	0.4		
AC87084-3	7.0	7.0	7.0	4.9	3.8	8	3.2	2.1	23	0.22	24.5	6.9		
AO87277-6	10.0	8.0	8.0	4.8	3.6	0	4.0	1.3	24	0.08	28.8	4.9		
CO85026-4	9.0	7.0	7.0	4.8	3.3	1	3.3	3.0	20	0.30	18.7	0.9		
CO87009-4	9.0	20.0	20.0	4.5	3.8	17	3.6	0.8	23	0.06	20.3	1.2		
CORN-3	14.0	7.0	7.0	4.9	4.5	5	3.6	2.5	19	0.23	18.8	1.3		
CORN-8	13.0	7.0	7.0	4.9	4.5	5	3.5	2.1	20	0.22	19.8	1.8		
NDD840-1	3.0	16.0	16.0	5.0	3.9	8	3.7	2.5	21	0.17	23.0	2.1		
TX1385-12RU	12.0	6.0	6.0	4.8	3.3	3	3.5	1.2	20	0.05	16.5	3.4		
TXAV657-27RU	11.0	8.0	8.0	4.1	3.6	2	3.3	2.1	20	0.12	16.9	3.0		
TXNS112	10.0	9.0	9.0	4.9	4.5	4	4.1	2.5	20	0.22	20.5	1.8		
TXNS223	10.0	11.0	11.0	4.9	4.6	4	4.1	2.5	19	0.24	20.0	1.4		
TXNS278	10.0	9.0	9.0	4.9	4.6	3	4.2	2.3	19	0.21	21.1	1.9		
SHEPODY	5.0	7.0	7.0	4.7	4.8	4	4.3	3.0						
Means	11.0	10.0	10.0	4.6	4.1	5	3.7	1.9	21	0.17	21.1	2.3		

¹ Firm omitted. Late Harvest, eight locations.² 5.0 (none) to 1.0 (severe).³ Mean of 9 locations including Early Harvest, >12 oz. tubers; includes brown center.⁴ Mean of 5 locations, (2 loc. for Shepody and NDD840-1), 1.0 (darkest) to 5.0 (lightest).⁵ Mean of 5 locations (Slv, Ab, Hrm, Kim, Klm), out of 45 F storage, <1.0 (lightest) to 4.0 (darkest).⁶ Mean of 5 locations (Ab, Kim, Hrm, Klm, Mal).⁷ Aberdeen tubers only, sampled late October; DWB = dry weight basis; FWB = fresh weight basis.

Western Table 7. 1997 Merit scores, processing and fresh market, and disposition.

Entry	Merit Score: Processing ^{1/}				Merit Scores: Fresh Market							Disposition ^{3/}
	Idaho		Oregon		Calif ^{2/}	Idaho		Oregon				
	SLV	2/	Hrm	Mean		SLV	2/	Hrm	Spr	Mean		
RUSSET BURBANK	4.0	2.7	4.0	3.6	2.2	3.0	2.0	5.0	3.3	3.1	CHECK	
RANGER RUSSET	-	4.0	4.0	4.0	2.7	-	3.3	3.0	3.8	3.2	CHECK	
RUSSET NORKOTAH	1.0	2.0	2.0	1.7	4.2	1.0	4.0	5.0	3.5	3.5	CHECK	
A82360-7	5.0	3.8	3.0	3.9	2.5	5.0	2.9	2.0	-	3.1	RTC	
A8792-1	-	4.3	4.0	4.2	3.4	-	2.9	2.0	3.5	3.0	DROP	
AC87084-3	5.0	3.2	1.0	3.1	3.5	5.0	3.4	2.0	3.3	3.4	CONT	
AO87277-6	-	4.5	5.0	4.8	3.1	-	3.4	4.0	3.5	3.5	CONT	
CO85026-4	1.0	2.8	1.0	1.6	3.4	2.0	3.4	2.0	3.3	2.8	RTC	
CO87009-4	3.0	3.3	4.0	3.4	2.7	1.0	2.8	4.0	2.8	2.7	DROP	
CORN-3	1.0	1.8	1.0	1.3	3.6	5.0	3.0	4.0	4.3	4.0	CONT	
CORN-8	1.0	2.0	1.0	1.3	3.7	3.0	2.9	4.0	4.3	3.6	CONT	
NDD840-1	-	2.3	1.0	1.7	2.5	-	3.6	3.0	-	3.0	CONT	
TX1385-12RU	2.0	3.2	2.0	2.4	2.6	1.0	2.1	1.0	3.8	2.1	CONT	
TXAV657-27RU	3.0	3.5	3.0	3.2	2.6	3.0	2.0	3.0	3.8	2.9	RTC	
TXNS112	1.0	2.0	1.0	1.3	5.0	4.0	3.6	4.0	4.3	4.2	CONT	
TXNS223	1.0	2.2	1.0	1.4	-	3.0	3.0	5.0	4.3	3.8	CONT	
TXNS278	1.0	2.0	1.0	1.3	4.0	2.0	3.3	5.0	4.3	3.7	CONT	
SHEPODY	3.0	2.0	-	2.5	-	4.0	2.8	-	3.5	3.4	CHECK	
Means	2.3	2.9	2.3	2.6	3.2	3.0	3.0	3.4	3.7	3.3		

^{1/} 1.0 (poorest) to 5.0 (best).

^{2/} Composite scores for Ab & Kim, and for Km & Tul early and late trials.

^{3/} RTC = regional testing completed (3 yrs), CONT = continue in trial, DROP = drop from trial, CHECK = control.

CALIFORNIA

R. Voss, H. Phillips, J. Nunez, D. Kirby, F. Laemmle, R. Mullen, R. Smith, J. Valencia, M. Jimenez

OBJECTIVES

The major objectives of the California Potato Variety Selection and Development program are 1) obtain or develop new russet, white, red, processing and specialty varieties of improved adaptability and quality, 2) demonstrate the characteristics of the many new varieties and advanced selections being developed in the U.S., Canada and Europe, 3) determine relative resistance/susceptibility of named varieties and advanced selections to common diseases, insects and environmental stresses, and 4) assess cultural requirements of advanced selections and new varieties.

SUMMARY:

Large, comprehensive evaluation trials were grown in Kern County and Tulare Intermountain Research and Extension Center (IREC). In addition, small trials were conducted in grower cooperator fields in numerous other locations - Santa Maria, Humboldt Co., Placer Co., Salinas Valley, Kearney Ag Center, and Stanislaus Co. The trials conducted included 1) Western Regional early russet, late russet, chipping, specialty and red trials - Kern, Tulare; 2) Snack Food Association nationwide uniform chipping trial - Kern; 3) Replicated early and late trials, with different harvest dates - Tulare; 4) Replicated trials of commercially grown varieties - Tulare; 5) Late Blight resistance screening at UC Cotton Research Station near Shafter - Kern; 6) Russet Norkotah seed source trials - Kern County and Tulare; 7) Potato Virus Y

effect on Russet Norkotah growth and yield - Tulare; 8) Six county/grower replicated trial of russets (1) chippers (1), reds and specialty (4), 9) Observation trials of 5-hill, 12-hill, 27-hill and 2X27-hill entries - Kern and Tulare; 10) Storage evaluation trial at Tulare, and 11) Seed increase block in Stockton Delta.

The highest rated russets were, **A8792-1, AC87079-3, AC87084-3, AC87138-4, AO87277-6, CO85026-4, Legend, Russet Norkotah TXNS278, Russet Norkotah #3, Russet Norkotah #8** (both from Colorado), **Russet Norkotah TXNS112**, (both from Texas)

The highest rated reds were **Ciklamen, DT6063-1R ('Cherry Red'), IdaRose (AD82745-1, A82705-1), Modoc, NDO2438-6, NDO2438-7, NDO2686-4, NDO2686-6, NDO4588-5, NDO4592-3, NDO4300-1, NDO5108-1.**

The highest rated chippers were **A8961-14, AC87340-2 ATX85404-8, Chipeta, CO87106-5, FL-1900, FL-1896, FL-1625, FL-1533, FL-1879, NY103 and Snowden.**

The highest rated long whites were **AD84087-1, ND2050-1 and Tejon.**

The highest rated specialty types in were **Agria, Albina, Dali, G742-4X, German Butterball, Granola, Latona, Vera, and Vital.**

A Late Blight resistance screening trial was conducted in Kern County. Despite inoculation, no late blight disease infection occurred in any of the plots. Thus, no new information on potential resistance/tolerance was gathered at Shafter. However, in 1996, excellent results were recorded. The most "resistant" or "tolerant" of the 100 entries,

which included the USDA uniform trial, were **AO84275-3, NDD840-1, B0767-2, AWN85542-1, Calrose, H5954, AO80432-1, B0718-3, H-5978, and Bzura**. Pathogen type was primarily g11 (US11?). Late blight was observed, for the first recorded time, in the Tulelake area in 1997. It occurred in numerous commercial fields as well as in our variety experimental plots at IREC. Relative disease ratings were obtained on the observational plots only. Among those with no disease were five of the seven lines from the late blight breeding program at USDA - Madison, Wisconsin - **J101K6A22, K101K9, J103K7, J101K27, K138A12**. The others were **AWN86514-2, AC91848-2, AC91814-1, A8961-14, B0718-3**.

Russet Norkotah seed source trials in Kern Co and at Tulelake indicated a wide range of yield potentials, just as they did in 1996. In Kern County, 33 seed lots ranged from 305 cwt/A to 575 cwt/A of No. 1's. At Tulelake, 55 seed lots, including the same 33 as planted in Kern County, ranged from 245 cwt/A to 455 cwt/A of No. 1's. Also like 1996, of the 30 lots planted in both locations, the relative ranking of yields was not consistent. For example, several of the highest yielding lots at Kern County were among the lowest at Tulelake, and vice versa. The clonal selections from Colorado and Texas, **Colorado RN #3, Colorado RN#8, Texas TXNS112 TXNS223, and Texas TXNS278**, had greater vine growth, generally, higher yields than the 'standard' clone:.

Russet Norkotah Potato Virus Y Trial.

One of the possible reasons for the variable performance of Russet Norkotah is Potato Virus Y (PVY) infection. Visual symptoms are not always readily apparent in this variety, thus infection and spread can occur

before it becomes obvious. Two seed sources were identified, with 0% and 60% of the tubers infected with PVY. The two lots were mixed in different proportions to produce five levels of PVY tuber infection. Identical trials were planted at IREC (Tulelake), the Klamath Experiment Station, and at Hermiston, Oregon in the Columbia Basin. In 1996, at Tulelake, the rate of decline was approximately 1 2/3 cwt/A in total yield for each 1% increase in PVY seed infection. The rate of decline was approximately 1 1/3 cwt/A in No. 1 yield for each 1% increase in PVY infection. The experiment was duplicated in 1997.

Leaf samples were collected early, mid and late season and laboratory assayed to determine the extent of PVY spread from non-infected to infected plants. At Tulelake, in 1996, very little PVY spread had occurred by the end of June. Yields corresponded to the amount of PVY present in the seed at planting time. Total and No. 1 yields both decreased linearly as PVY infection increased. Since disease spread did not occur during the season, the yield reduction was less than in 1996 - only approximately 75 lbs/A (3/4 cwt/A) for each 1% increase in PVY in the seed. This decrease rate was equally applicable for Total and No. 1 yields. Almost all of the yield differences were reflected in large tubers, >12 oz. At Hermiston, with heavy aphid pressure, near total PVY infection occurred early in the season; the resultant effect on yield was much more dramatic than at Tulelake. At Klamath Falls, infection increase was similar to Tulelake.

New Releases

CalWhite release was formalized jointly with USDA and Univ. of Idaho.

Table 1.
1997 CALIFORNIA
REPLICATED POTATO VARIETY TRIAL
 Summary of No. 1 Yields, Specific Gravity
 and Fresh Market Quality

Russets

Entry	Kern	IREC		Santa Maria	Adjusted Deviation from Mean	1.0xx SpGr	F.M. Quality
		Early	Late				
A84118-3	--	--	--	385	-18	--	3.8
A86102-6	--	--	266	--	-137	84	3.7
A8792-1*	506	--	626	--	110	90	3.4
AC83064-6	--	--	365	424	-9	82	3.8
AC87079-3	--	--	489	--	86	83	3.7
AC87084-3*	600	--	399	--	44	90	3.5
AC87138-4	--	--	473	--	70	85	4.0
AC87210-2	--	--	303	--	-100	66	2.3
AC88042-1	--	--	356	--	-47	79	2.5
AC88162-4	--	--	368	414	-12	101	3.4
AC88165-3	--	--	384	--	-19	87	3.0
AC89047-1	--	--	301	--	-102	92	2.8
AO85165-1	417	--	355	--	-70	77	2.6
AO87277-6*	477	--	449	--	7	92	3.0
CO85026-4	--	424	--	431	25	80	3.8
CO85026-4*	406	--	416	--	-45	86	3.4
CO87009-4*	343	--	381	--	-94	88	2.6
CO89036-10	--	--	393	--	-10	84	2.3
CO89037-7	--	--	370	--	-33	75	3.0
Legend	422	--	391	--	-50	88	3.4
NDD837-2	--	--	292	--	-111	79	2.3
NDD840-1*	446	--	284	467	-4	82	3.0
NDO2904-7	--	--	--	332	-71	--	4.0
R. Burbank *	280	301	356	494	-45	86	2.9
R. Norkotah-3*	571	438	499	--	100	76	4.0
R. Norkotah-8*	517	350	381	--	13	77	3.9
R. Norkotah *	338	265	405	306	-75	77	4.0
RANGER R. *	538	--	475	559	121	81	3.0
TC1406-1	--	--	376	--	-27	81	3.0
TC1412-5	--	--	389	--	-14	97	2.8
TND329-1	--	--	384	--	-19	69	4.0
TX1385-12*	420	--	489	--	-1	79	2.5
TXAV657-27*	565	--	545	--	99	79	2.5
TXNS112*	--	284	495	--	-14	73	4.5
TXNS278*	--	337	405	--	-32	76	4.0
Umatilla	379	--	386	--	-73	88	2.6
Average	449	343	402	419	403	83	3.3

Table 2.
1997 CALIFORNIA
REPLICATED POTATO VARIETY TRIAL
Summary of No. 1 Yields, Specific Gravity and Fresh Market Quality

Reds

Entry	Kern	IREC	Santa Maria	Monterey	Stanislaus	Placer	KAC	Adjusted Deviation frm Mean	1.0xx SpGr	F.M. Quality
A84118-3	--	--	385	--	--	--	--	87	--	--
A88475-4	--	378	--	--	--	--	--	80	69	4.0
AD82706-2	--	373	--	--	--	--	--	75	67	4.0
AD82706-2	--	373	472	--	256	195	190	-1	67	3.3
AD82745-1	403	420	--	--	--	--	--	114	69	3.8
Cherry Red	--	398	--	175	296	--	154	-42	75	3.2
Chieftan	--	--	--	207	305	--	--	-42	--	3.0
Ciklamen	465	--	--	--	--	--	--	167	91	3.5
CO86142-3 *	310	300	249	--	--	--	--	-12	83	3.5
CO86218-2 *	316	281	--	--	--	--	--	1	77	3.1
COO86107-1R *	313	271	--	--	--	--	--	-6	85	3.5
Dk Rd Norland*	395	262	--	--	--	--	--	31	68	3.4
DT6063-1R *	484	--	--	--	--	--	--	186	80	3.5
Fontenot	--	--	--	--	--	--	201	-97	--	--
G8160-6	--	--	--	--	345	245	260	-15	--	29.7
Ida Rose (AD82745-1)	--	--	--	--	--	--	192	-106	--	--
Modoc	367	462	--	--	--	--	--	116	71	4.4
NDO2438-6R *	350	--	--	--	--	--	--	52	70	4.5
NDO2438-7	--	466	--	--	--	--	--	168	69	4.0
NDO2686-4	451	341	--	131	273	261	--	-6	75	16.6
NDO2686-6R *	343	406	--	--	--	--	--	76	81	4.0
NDO4232-1	--	192	--	--	--	--	--	-106	69	4.0
NDO4300-1	310	338	--	--	--	--	--	26	71	3.8
NDO4588-5	385	327	--	--	--	--	--	58	73	4.0
NDO4592-3	438	294	--	--	--	--	--	68	69	3.8
NDO5108-1	340	312	--	--	--	--	--	28	74	3.3
Red Chieftan	--	--	--	--	--	413	--	115	--	82.9
Red LaSoda*	470	390	--	173	514	286	304	58	73	14.6
Sangre*	276	265	--	--	--	--	--	-27	72	3.0
Average	377	342	369	172	332	280	217	--	74	9.9

Table 3.
1997 CALIFORNIA
REPLICATED POTATO VARIETY TRIAL
 Summary of No. 1 Yields, Specific Gravity
 and Fresh Market Quality

Long Whites

Entry	Kern	IREC	KAC	Adjusted Deviation from Mean	1.0xx SpGr	F.M. Quality
AD84087-1	324	--	--	-39	87	2.8
AD84087-3	--	372	--	9	84	4.0
CalWhite*	--	300	313	-57	82	2.8
Mondial	627	--	--	264	76	2.5
ND2050-1	575	--	--	212	80	2.8
Shepody*	325	251	--	-75	83	2.3
Tejon	492	--	--	129	74	2.8
White Rose	478	301	--	26	75	2.3
Average	470	306	313	--	80	2.8

Table 4.
1997 CALIFORNIA
 REPLICATED POTATO VARIETY TRIAL
 Summary of No. 1 Yields, Specific Gravity and Fresh Market Quality

Specialty

Entry	Type	Kern	IREC	Monterey	Stanislaus	Placer	KAC	Adjusted Deviation from Mean	1.0xx SpGr	F.M. Quality
Agria	Y	539	—	267	413	—	282	10	81	3.7
Albina	Y	559	—	—	—	—	—	194	96	3.5
B141	W/Pu	—	—	—	377	—	333	-10	—	2.4
Bintji	Y	—	—	324	510	—	—	52	—	2.6
Brigus	Pu	—	—	—	416	306	241	-44	—	2.0
Dali	Y	—	567	—	—	—	—	202	75	4.5
Delta Gold	Y	—	—	—	352	206	320	-72	—	2.8
Desiree	Pk/Y	—	409	195	374	192	245	-82	88	2.4
Fontenot	Pu	—	—	315	420	—	—	2	—	3.4
G742-4X	Y	—	—	258	362	198	229	-103	—	3.3
German Butter Ball*	Y	605	389	265	444	440	338	49	83	3.4
Granola*	Y	601	393	289	398	317	354	27	74	3.5
Inca Gold	Y	223	175	—	—	—	—	-166	78	2.6
Latona	Y	—	583	—	—	—	—	218	83	4.0
NDC4069-4R/R *	R/R	467	297	322	469	394	444	34	83	3.5
Penta	Y	—	—	—	—	—	246	-119	—	—
Pimpernel*	R/Y	—	501	—	—	—	—	136	107	3.0
Rose Gold*	Pk/Y	—	425	257	470	279	275	-24	77	2.7
Russian Banana	Y	—	—	—	—	292	—	-73	—	3.8
Vera	Y	758	—	—	—	—	—	393	72	3.5
Vital	Y	782	—	—	—	—	—	417	80	3.3
Yellow Finn*	Y	417	161	298	217	240	257	-100	87	3.0
Yukon Gold*	Y	379	368	275	379	409	185	-33	86	3.5
Average		533	391	279	400	296	288		83	3.1

Table 5.
1997 CALIFORNIA
 REPLICATED POTATO VARIETY TRIAL
 Summary of No. 1 Yields, Specific Gravity

Chippers

Entry	Kern	IREC	1.0xx SpGr	Chip Analysis	
				Color Meter	Total Defect
A88431-1 *	391	--	--	64	0
A8961-14 *	595	--	83	--	3
AC87313-3	317	--	86	--	0
AC87340-2	447	--	79	67	1
AC88357-3 *	223	--	90	65	1
Atlantic*	283	373	95	67	2
ATX85404-8	409	--	80	62	2
BCO894-2	321	--	79	64	0
Chipeta*	533	285	79	67	0
CO87106-5	401	--	90	--	1
FL-1291	--	333	90	--	--
FL-1533	--	444	77	--	--
FL-1625	--	466	98	--	--
FL-1863	397	353	82	--	1
FL-1867	347	340	97	67	1
FL-1874	239	293	85	--	2
FL-1879	--	424	85	--	--
FL-1896	405	--	93	68	2
FL-1900	423	--	--	64	3
NDC4327-2 *	379	--	78	--	5
NDD840-1	--	231	78	--	--
NorValley*	293	354	77	--	2
Snowden	--	373	92	--	--
Average	385	358	87	66	1.5

COLORADO

D. G. Holm and J. D. Wick¹

Objectives

The major objectives of the Colorado breeding program are: (1) to develop new potato cultivars (russets, chippers, and reds) with increased yield, improved processing and fresh market quality, resistance to diseases and pests, and tolerance to environmental stresses; and (2) to provide a basic seed source of selections for possible seed export.

Breeding Program

Fifty-one parental clones were intercrossed in 1997. Seeds from 193 combinations were obtained. Seedlings from selected families will be produced in 1998 for initial field selection in 1999.

Another thirty-six parental clones were intercrossed in early 1998. Primary emphasis of this crossing block was specialty types (yellow fleshed reds, whites, and russets, and colored fleshed chippers).

One hundred seventeen 1996 seedling families were grown in the greenhouse producing 41,300 seedling tubers for initial field selection in 1998. Surplus tubers (second thru forth sizes) will be distributed to Idaho, Minnesota, Oregon, Texas, and Alberta, Canada.

A second, smaller planting of seedlings representing 14 families was grown in the greenhouse. These families resulted from 1994 crosses emphasizing specialty types and will also be planted for initial field selection in 1998.

Additional seedling tubers were obtained from Dr. J. J. Pavsek, USDA-ARS, Aberdeen, Idaho; ; Dr. Dermot Lynch, Agriculture Canada, Lethbridge, Alberta; and Dr. J. Creighton Miller, Texas A&M University, College Station, Texas.

¹Holm and Wick are Professor and Research Associate, respectively, San Luis Valley Research Center - Colorado Agricultural Experiment Station, Department of Horticulture and Landscape Architecture, Colorado State University, 0249 East Road 9 North, Center, CO 81125.

Selection Program

A total of 73,324 first-year seedlings were planted with 820 being selected at harvest for further observation. Another 936 clones were in 12-hill, preliminary, and intermediate stages of selection. Of these, 262 were saved at harvest for further evaluation. Twenty-five advanced selections were saved and contingent on additional evaluations, will be increased in 1998. Another 153 selections were maintained for germplasm development, breeding, other experimental purposes, or seed increases for the Texas program.

Advanced Yield Trial. Twenty-two clones, 18 advanced selections and 4 cultivars, were evaluated in the Advanced Yield Trial. Results on yield, grade, and processing characteristics are summarized in Tables 1 and 2.

Several selections had yields greater than 400 cwt/A. Clones yielding greater than 500 cwt/A were AC87138-4, AC89536-5, and CO90052-1. Avalanche was the highest yielding cultivar with 707 cwt/A.

Selections producing acceptable fry colors were AC83064-6, AC87138-4, and CO083008-1.

Two russet selections, AC88042-1 and AC88165-3, will be entered in the 1998 Western Regional Main Trials. Seed of these selections will also be released for grower trials in 1998.

Western Regional Main Trial. Eleven selections and five cultivars were entered in the Colorado Western Regional Main Trial.

The number of entries in this trial has been significantly reduced since 1995. This is due to the exclusion of all entries coming from areas where seed stocks potentially have been exposed too late blight. We are attempting to initiate tissue culture based increases of all potential entries from the various cooperating programs two years in advanced of entrance in the Western Regional Trials (Main, Chip, Red, and Specialty).

Selections entered by Colorado in 1997 included AC87084-3, CO85026-4, CO87009-4 and Russet Norkotah S3 and S8. CO85026-4 graduated from the Western Regional Trial having completed three years of evaluation in 1997. Selection CO87009-4 was withdrawn and discarded from further evaluations because of poor performance overall.

The top yielding selection was A82360-7 (552 cwt/A). The 1997 production year was ideal for Russet Norkotah in San Luis Valley trials. All of the line selections still had greater total and US #1 yields compared with the standard. Russet Norkotah S3 performed better than any of the other clonal selections.

The Russet Norkotah clonal selections responded similarly in the postharvest evaluations. One notable exception was that Russet Norkotah S3 had a longer dormancy than any other selection in the trial. This observation should be validated in future studies.

Selections with acceptable fry scores were A82360-7, AC87084-3, CO87009-4, and TX1385-12RU.

Colorado will reenter AC87084-3 and Russet Norkotah S3 and S8. New entries from Colorado in 1998 will be AC88042-1 and AC88165-3.

Results of this trial are presented in the Western Regional Trial report elsewhere in the publication.

Western Regional and Advanced Chipping Trial.

The Colorado Western Regional Chip Trial also included intermediate and advanced chipping selections from the selection program that were not formally entered into the regional trials. Eighteen entries, 13 selections and 5 cultivars, were included in the Colorado Western Regional Chip Trial. Trial results are presented in Tables 3 and 4.

Colorado entered AC88357-3 in the 1997 Western Regional Chip Trials. This selection was discarded from further evaluation because of poor performance overall.

The highest yielding selections were AC89653-3 and ATX85404-8. Chipeta had the overall highest total and US #1 yield of 514 and 429 cwt/A, respectively.

Several selections showed susceptibility to black spot bruising. Some of these selections have not shown

susceptibility in the past. Overall, blackspot was more severe in our 1997 trials.

Two selections, CO90217-1 and CO90217-4, have "cold" chipping potential. These selections resulted from a cross of ND2008-2 and ND1995-1.

Selection AC87340-2 will be entered in the 1998 Western Regional Chip Trials.

Colorado initially entered BC0894-2 into the Western Regional Chip Trials in 1994. This selection graduated from the trial in 1996. This selection is early maturing and continues to show potential for eventual naming. BC0894-2 was also entered into the Snack Food Association (SEA) Trials in 1995-1997. Another selection with considerable potential is Texas selection ATX85404-8. It will be entered in the SFA Trials for the third year in 1998.

Western Regional Red Trial. The Colorado Western Regional Red Trial also includes intermediate and advanced red selections from the selection program that were not formally entered into the regional trials. The Colorado trial included 13 entries, 10 selections and 3 cultivars. Trial results are summarized in Table 5.

Entries from Colorado in the Western Regional Red Trial included CO86142-3 (NDTX302-1 x Redsen), CO86218-2 (Sangre x NDTX9-1068-11R) and DT6063-1R. CO86142-3 and CO86218-2 were in the trial for a fourth year because of a lack of entries in 1997. These two selections will not be reentered in 1998. DT6063-1R completed two years of regional testing in 1997 and will be reentered in 1998. Selection CO86142-3 has been discarded due to tuber dry rot and susceptibility to PVY.

Several red selections are early maturing and have relatively high yields. Several red selections also showed susceptibility to blackspot bruising. As observed in the chip trial, blackspot bruising was more severe in 1997.

Selection CO89097-2 will be entered in the Western Regional Red Trials in 1998.

Grower Evaluations. Grower evaluations were conducted on eight russets (AC78069-17, AC83064-1, AC83064-6, AC87084-3, CO80011-5, CO81082-1, CO86026-4, and CO87009-4), two chipping

selections (ATX85404-8 and BC0894-2), and two reds (CO86218-2 and DT6063-1R).

Selections AC78069-17 and CO81082-1 were discarded after several years of grower evaluation. CO87009-4 was also discarded because several lots had mediocre yields due to a lack of tuber sizing. Comparative data for the remaining selections and standard cultivars is presented in Table 6.

Selections to be named in 1998 included CO80011-5 (Crestone Russet) and AC83064-6. DT6063-1R will be named after another year of evaluation in the Western Regional Red Trial. Selections that will continue undergoing grower evaluation are AC83064-1, CO85026-4, AC87084-3, ATX85404-8, BC0894-2, and CO86218-2.

Two new russet selections to be evaluated by growers in 1998 are AC88042-1 and AC88165-3. AC88042-1 is a medium maturing dual purpose clone with processing and fresh market potential. It was selected from a cross of Norking Russet x A81286-1. AC88165-3 is also a medium maturing fresh market clone selected from a cross of A81323-38 x Ranger Russet.

Colorado Table 1. Yield, grade, tuber shape, and skin type for Advanced Yield Trial clones - 1997.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC78069-17	409	374	91.5	123	23	Ob,Ru
AC83064-1	463	403	87.1	83	55	L,Ru
AC83064-6	402	322	80.4	37	79	L,Ru
AC87079-3	428	338	78.7	57	87	Ob,Ru
AC87138-4	523	411	78.9	102	99	L,Ru
AC88042-1	357	223	62.3	2	129	L,Ru
AC88162-4	382	268	69.9	43	84	L,Ru
AC88165-3	437	355	81.2	48	73	L,Ru
AC89536-5	515	461	89.5	106	50	Ob,Ru
AC90017-2	422	353	83.6	29	61	Ob,Ru
CO80011-5	391	320	81.7	48	66	Ob,Ru
CO81082-1	415	381	91.7	136	31	L,Ru
CO89036-10	445	339	75.7	36	102	Ob,Ru
CO89037-7	360	320	88.8	60	38	Ob,Ru
CO90045-4	309	239	77.0	14	60	L,Ru
CO90052-1	543	462	85.1	111	67	L,Ru
COO83008-1	407	367	90.2	110	28	L,Ru
UCR1-18	371	333	89.8	89	34	L,Ru
Avalanche	707	576	81.6	136	111	Ob,W
Centennial Russet	390	304	77.8	12	86	Ob,Ru
Russet Norkotah	405	335	82.3	49	61	L,Ru
Russet Nugget	430	343	79.8	70	83	Ob,Ru
Mean	432	356	82.0	68	68	----
LSD ² (0.05)	54	53	4.5	36	17	----

¹Tuber shape & skin type: Ob=oblong; L=long; Ru=russet; W=white.

²LSD=least significant difference.

Colorado Table 2. Specific gravity, french fry color, and texture for Advanced Yield Trial clones - 1997.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	3 wks 50F+ 8 wks 45F	At Harvest	3 wks 50F+ 8 wks 45F
AC78069-17	1.083	2	3	3	3
AC83064-1	1.077	4	4	2	3
AC83064-6	1.080	2	2	3	3
AC87079-3	1.091	2	3	4	4
AC87138-4	1.093	2	2	3	3
AC88042-1	1.077	3	3	2	2
AC88162-4	1.102	4	4	2	3
AC88165-3	1.088	3	3	3	3
AC89536-5	1.086	2	3	2	2
AC90017-2	1.081	4	4	2	2
CO80011-5	1.074	4	3	2	2
CO81082-1	1.070	4	4	2	2
CO89036-10	1.089	4	4	2	3
CO89037-7	1.077	3	3	3	3
CO90045-4	1.080	3	2	4	4
CO90052-1	1.078	3	3	4	3
COO83008-1	1.093	2	2	3	4
UCR1-18	1.075	3	3	3	3
Avalanche	1.084	4	4	2	2
Centennial Russet	1.082	4	4	2	1
Russet Norkotah	1.080	3	3	2	2
Russet Nugget	1.092	2	2	5	4

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

Colorado Table 3. Yield, grade, tuber shape, and skin type for Western Regional and Advanced Chipping Trial clones - 1997.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC87340-2	445	308	69.3	29	137	R,W
AC88357-3	364	289	79.4	25	71	R,W
AC89653-3	476	364	76.3	21	111	R,W
AC91698-3	376	258	68.4	29	110	R,W
AC91817-5	334	206	61.7	8	126	R,W
ATX85404-8	456	358	78.4	53	94	R,W
B0717-1	442	356	80.4	18	84	R,W
BC0894-2	383	327	85.6	39	50	R,W
BC1447-1	337	307	91.0	62	29	R,W
BC1470-1	370	283	76.3	16	86	R,W
CO90217-1	384	271	70.4	25	108	R,W
CO90217-4	324	226	69.7	15	93	R,W
ND2471-8	405	328	80.9	46	75	R,W
Atlantic	390	364	93.2	143	25	R,W
Chipeta	514	429	83.7	82	59	R,W
NorValley	388	256	65.9	21	129	R,W
Snowden	456	341	75.0	34	112	R,W
Superchip	343	302	88.1	133	34	R,W
Mean	399	310	77.4	44	85	----
LSD ² (0.05)	38	42	5.5	22	20	----

¹Tuber shape & skin type: R=round; W=white.

²LSD=least significant difference.

Colorado Table 4. Chip color¹ after various storage regimes and specific gravity of Western Regional and Advanced Chipping Trial clones - 1997.

Clone	Specific Gravity	6 wks 40F	6 wks/40F +3 wks/60F	6 wks 50F	6 wks/50F +3 wks/60F
AC87340-2	1.090	3.0	3.0	1.0	1.0
AC88357-3	1.099	3.5	2.5	3.0	1.5
AC89653-3	1.094	4.0	3.5	1.5	2.0
AC91698-3	1.091	4.0	2.5	1.5	1.5
AC91817-5	1.109	2.5	3.0	2.0	1.5
ATX85404-8	1.101	4.0	2.5	2.0	1.5
B0717-1	1.095	5.0	3.0	2.0	2.5
BC0894-2	1.087	4.0	3.0	2.0	1.5
BC1447-1	1.080	4.0	3.0	2.0	1.5
BC1470-1	1.115	4.0	2.5	2.5	2.0
CO90217-1	1.084	1.5	1.5	2.0	1.5
CO90217-4	1.096	2.5	2.0	1.0	1.5
ND2471-8	1.093	4.0	4.0	2.5	2.0
Atlantic	1.105	4.5	3.0	3.0	2.0
Chipeta	1.100	4.5	3.0	2.5	1.5
NorValley	1.088	3.5	3.5	2.5	2.0
Snowden	1.106	4.5	2.5	2.0	1.0
Superchip	1.085	3.0	2.5	2.0	1.0

¹ Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤ 2.0 are acceptable.

Colorado Table 5. Yield, grade, tuber shape, and skin type for Western Regional and Advanced Red Trial clones - 1997.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC91844-2	394	280	70.9	20	113	R,R
AC91848-1	410	361	87.8	66	48	R,R
AC91848-2	388	287	74.0	36	98	Ov,R
CO86142-3	380	295	77.6	8	80	R,R
CO86218-2	398	319	80.3	52	77	R,R
CO89097-2	499	415	83.3	69	83	R,R
COO86107-2R	379	328	86.4	42	52	R,R
DT6063-1R	449	400	89.0	98	39	Ob,R
NDC4655-1	397	280	70.2	24	111	R,R
NDO2438-6	418	340	81.2	71	71	R,R
Norland (Dark Red)	536	455	84.7	60	74	R,R
Red LaSoda	490	413	84.2	112	41	R,R
Sangre-S10	532	475	89.4	177	49	Ov,R
Mean	436	358	81.5	64	72	----
LSD ² (0.05)	41	45	4.8	37	16	----

¹Tuber shape & skin type: R=round; Ov=oval; Ob=oblong; R=red.

²LSD=least significant difference.

Colorado Table 6. Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects - 1997.

Clone	Usage ¹	Loc x Years	Total Yield (Cwt/A)	% US #1	Vine Maturity ²	Specific Gravity	% External Defects ³	% Hollow Heart ⁴
Russets								
CO80011-5	FM	12	392	84.0	2.5	1.072	2.7	0.1
AC83064-1	FM	9	470	88.4	3.2	1.078	1.4	0.0
AC83064-6	FM/Fry	9	391	86.0	3.0	1.079	0.9	0.1
CO85026-4	FM	7	370	89.8	3.6	1.082	2.7	0.0
AC87084-3	FM/Fry	5	512	90.9	3.4	1.094	1.7	0.0
AC88042-1	FM/Fry	4	362	73.1	3.0	1.076	1.5	0.0
AC88165-3	FM	4	424	80.7	2.9	1.080	1.4	0.0
Centennial Russet	FM	35	294	77.4	3.0	1.081	0.8	0.3
Russet Norkotah	FM	22	315	83.6	1.4	1.076	1.7	0.2
Russet Nugget	FM/Fry	25	416	81.6	3.9	1.095	1.5	0.1
Chippers								
ATX85404-8	Chip	6	472	75.9	3.0	1.091	1.0	0.1
BC0894-2	Chip	6	393	85.1	1.9	1.080	0.8	0.0
Atlantic	Chip	11	411	87.8	3.3	1.097	1.4	2.4
Chipeta	Chip	12	484	84.4	3.4	1.092	3.3	0.3
Reds								
CO86218-2	FM	6	390	81.8	2.9	1.076	0.9	0.0
DT6063-1R	FM	4	442	88.3	2.7	1.081	2.3	0.5
Sangre	FM	15	438	85.6	2.8	1.075	0.9	0.3

¹FM=fresh market; Fry=french fry; FM/Fry indicates a dual purpose clone.

²Vine maturity: 1=very early; 2=early; 3=medium; 4=late; 5=very late.

³Includes defects such as second growth, growth crack, misshapen, and green.

⁴Based on tubers greater than 10 ounces.

Idaho

S. Love, J. Pavék, D. Corsini, P. Bain, M. Ruby, J. Stimpson, D. Inglis, and M. Powelson

A major objective of the Idaho potato variety development project is to evaluate germplasm produced by the USDA/ARS potato breeding program located in Aberdeen, Idaho. These evaluations include variety trials, herbicide screening, culinary tests, and disease screening. The major emphasis is placed on developing long shaped, russet skinned varieties which have superior fresh market and french fry processing (dual purpose) quality. Some effort is also spent developing chipping varieties.

Replicated Variety Trials

Ten potato variety trials were conducted in 1997 at Rexburg, Shelley, Aberdeen, Kimberly and Parma, Idaho (Tables 1-10). Rexburg is located in the high elevation area of eastern Idaho and has the coolest, shortest season (120 days) of the four sites. Shelley and Aberdeen are located along the Snake River in eastern Idaho, are slightly warmer, and have a 130 day season. Kimberly is located in south-central Idaho and has a 140 day growing season. Parma is located in the warmer area of western Idaho and has a 160 day season. Trials at Aberdeen, Kimberly, and Parma were located on University of Idaho experiment stations, while the trials in Rexburg and Shelley were placed in growers fields. All trial sites were located within major potato producing areas.

The trials were planted between April 2 and May 16 and harvested between September 12 and October 6. Crop management practices were typical of those used in the region in which the trial was located. All trials were planted using a randomized complete block design with either four or six replications. Plots consisted of single rows, twenty feet long.

Following harvest the potatoes were weighed, graded, and sampled for internal quality evaluations. Depending on the specific objectives of the trial, samples were taken for evaluation of blackspot and shatter bruise susceptibility, presence of internal defects, specific gravity, french fry color, and dry matter yield.

Six of the ten trials were conducted to evaluate dual purpose russet or long-white, processing

selections (Tables 1-6). Two were conducted to evaluate chipping selections (Tables 7,8). Two were designed to evaluate selections for high dry matter yield with intent to identify clones superior for dehydration purposes (Tables 9,10).

The trials in Rexburg and Shelley included the most advanced russet breeding selections from the Aberdeen program (Tables 1,2). The unreleased entries had total yields equal to or higher than, and U.S. No 1 yields considerably higher than, Russet Burbank. The lowest yielding clones in these trials were Russet Norkotah and its line selection TXNS278. All of the unreleased selections in these trials had acceptable specific gravity, all but A86102-6 had acceptable french fry color, and all but COA90101-2 had low levels of internal defects.

The trial at Parma was designed to provide information on processing quality of advanced selections under the stressful growing conditions of western Idaho (Table3). All but A8495-1 and COA90101-2 had high yields at Parma. Russet Burbank, A8893-1 and COA90101-2 had high levels of hollow heart. All unreleased clones had lower levels of sugar-ends than the checks, and all but COA90101-2 had acceptable fry color.

Advanced russet selections, including clones in their fifth to fifteenth year of evaluation, were grown at Aberdeen and Kimberly (Tables 4,5). Of the thirteen selections in the trial, five had higher total yields at both locations than did Russet Burbank. All entries (except AO82611-7 at Aberdeen) had a higher percentage of U.S. No 1's, and all but two (A89384-10 and A9148-3) had a higher yield of U.S. No. 1's at both locations. Clones with a good combination of yield, specific gravity, fry color, and merit (appearance) scores included A81386-1, A8495-1, A88338-1, A9014-2, and AO82611-7.

The Tri-state trial represents the stage of evaluation beyond the advanced yield trials and includes locations in Oregon and Washington. In the Idaho location of this trial, A88338-1 and AO89128-4 were acceptable for all yield and quality parameters (Table 6). The other selections were low in yield or poor in appearance.

In the Idaho location of the Western Regional chipping trial, only the clone A88431-1 performed well enough to be considered for further evaluation. It had acceptable yield, exceptionally high specific gravity, outstanding chip color from both warm and cold storage. A8961-14 had good yield and adequate specific gravity, but show some chip color problems and frequent heat necrosis.

In the advanced selection chipping trial A88431-1 was the lowest yielding clone. (Table 8). Clones with a good combination of yield, specific gravity and chip color included A90450-16, A90467-14, A91746-8, and A91790-13.

Every clone tested in the advanced high dry matter trial produced a substantially higher yield of dry matter than did Russet Burbank (Tables 9,10). The superior dry matter yields were the result of a combination of high tuber yield and high tuber solids. The highest yield of dry matter at both Aberdeen and Kimberly was achieved by A82360-7. This is consistent with the results obtained for the past several years. Other outstanding clones were A8792-1 and A89219-7.

Sensory Evaluations

Five advanced breeding selections were compared to Russet Burbank in blind sensory evaluations of baked tubers. These evaluations were conducted by University of Idaho Extension personnel at the Bingham County Extension Office. Tubers were baked in a convection oven, then rated by trained panelists for color, texture, flavor, and overall quality. The evaluations were done twice, once within a month of harvest and again after five months of storage at 40°F.

In the fall evaluation, all five selections were similar to Russet Burbank for flavor and for overall sensory quality (Table 9). Some differences were present for the individual sensory categories. Russet Burbank had the lowest color rating, while AO82611-7 had the highest. A8495-1 and Russet Burbank had the highest texture rating of any clones in the trial. A82360-7, A8792-1, and AO82611-7 were inferior to Russet Burbank for texture.

After five months of storage, A8495-1 was the highest rated clone in every sensory category except color. This was similar to tests from 1996 when it was ranked highest in all categories following a period of storage. A8495-1 was rated best for

overall quality while the remaining selections were similar to Russet Burbank. In general the unreleased selections were better than Russet Burbank for color and similar with respect to the other categories.

Metribuzin Screening

Eight varieties and thirty breeding selections were tested for response to the herbicide metribuzin (Secor/Lexone). Estimations were made for percent foliar injury and measurements taken for vigor following a postemergence (8-10 inch plants) application of 1.0 lb a.i./A. Yield loss for each clone as a result of the application was predicted using a previously developed model which incorporates injury and vigor as inputs. Each variety or selection was assigned a relative resistance score based on yield loss in comparison with varieties of known response.

Exceptionally severe injury resulted from the metribuzin application in 1997 (Table 12). The known varieties responded in the expected fashion relative to one another, but yield loss was high. Shepody was very susceptible, and most plants died resulting in a predicted yield loss of 100%. Atlantic also showed a susceptible response. Russet Burbank was moderately resistant, and Russet Norkotah very resistant to injury. Most of the russet and long-white selections were resistant or very resistant to injury. The two obvious exceptions were selections AC87084-3 and CO87009-4 from Colorado which both showed high levels of injury.

The chipping and red selections showed a mixed response. Of special note were ATX85404-8 and AC88357-3, which were very susceptible and susceptible, respectively. NorValley and A88431-1 were moderately susceptible to injury.

Of the red clones, NDO2686-6R was susceptible to injury, while COO86107-1R, CO86142-3, and NDO2438-6R were moderately susceptible.

Disease Screening

Potato varieties and selections were evaluated for response to several important diseases, including Verticillium wilt, early blight, common scab, soft rot, and late blight.

Verticillium wilt, early blight, common scab, and soft rot: Breeding selections and standard cultivars were evaluated for their reaction to diseases that commonly occur in Idaho. Verticillium wilt, early blight, and common scab evaluations were done in fields at the University of Idaho Research Center, Aberdeen. Trials were grown in two fields as randomized complete blocks with three replications. Natural soilborne inoculum of *V. dahliae* occurred at both sites, and early blight spreader rows of cv Pioneer were interplanted with plots at one site. It is expected that early blight symptoms would have been more severe if contact fungicides for late blight control had not been used. No late blight occurred in the plots. The growing season was unusually cool and wet through July. Soft rot evaluations were done by inoculating tuber samples harvested from one of the test sites in mid September using 10^6 cells/ml *Erwinia carotovora* var. *atroseptica*. Tubers were evaluated after 5 days incubation in a mist chamber at 20°C. The least significant difference test was used to separate means.

Advanced selection A83008-8 showed the best Verticillium and early blight resistance of all clones tested, and also had good soft rot resistance. The new variety Umatilla Russet showed Verticillium wilt susceptibility similar to Russet Burbank but was slightly more susceptible to early blight. Four Russet Norkotah clonal selections, CORN*, TXNS112, TXNS223, and TXNS278 tended to have less susceptibility to early dying disease than the standard variety (not significant however at $p=0.05$).

Late blight: Arrangements were made to screen breeding material for late blight resistance in Corvallis, Oregon, and Mt. Vernon, Washington. The trials were conducted by Mary Powelson and Debra Inglis, respectively.

In both locations artificial inoculations were used to augment natural infection. Disease response was measured by monitoring disease progress and calculating Area Under the Disease Progress Curve (AUDPC). At Corvallis, the amount of tuber rot was also documented. Determinations of late blight strains were made at season's end. At Mt. Vernon two strains made up the majority of samples determined, including US11(A1) and US8(A2), while at Corvallis US8(A2) was present.

A wide range of responses to late blight were found among the clones in the trials (Tables 14,15).

All of the included named varieties commonly grown in North America were very susceptible to foliar blight at both locations. At Mt. Vernon, four named varieties had good resistance, Bzura, Brador, Alpha and Elba. (Table 14). Other clones with good resistance were A84118-3, A90586-11, AWN86524-5, and A82360-7. At Corvallis the trial included mostly clones which were a part of the western regional trials. Only the clone A88338-1 showed an appreciable amount of resistance to foliar blight. Although most clones were susceptible to foliar blight, many showed good resistance to tuber blight. These included A8792-1, A88338-1, AO82611-7, COO83008-1, and Atlantic.

Summary of Promising Breeding Selections

A81473-2: This selection will be released in 1998. It is an oblong russet with a very late vine and has performed best in the long season areas of western Idaho, Oregon, and Washington. It is the result of a cross between A75175-1 (Targhee x A67490-3) and A75188-3. A81473-2 was only grown at Parma in 1997 (Table 3) where it performed acceptably. It also had a higher yield and percentage of U.S. No. 1's than Russet Burbank and had higher specific gravity, less hollow heart, and fewer sugar-ends. In 1997 there were 366 acres of certified seed produced of A81473-2.

A82360-7: This oval, lightly russetted clone was developed specifically for dehydration purposes and selected for maximum dry matter yield. It is the result of a cross between A77182-1 (Atlantic x Lemhi Russet) and A75188-3. A82360-7 has shown potential for french fry production as well as dehydration. It was the highest yielding clone in every trial in which it was included in 1997, except at Rexburg, where it was second highest (Tables 1,2,9,10). In the high dry matter trial at Aberdeen, it produced 176% of the dry matter of Russet Burbank, while at Kimberly it produced 185%. This clone is currently being evaluated in commercial production trials. In 1997, there were 3 acres of certified seed produced.

A82705-1R: This red clone is a dark red, high yielding selection that has good storage characteristics. It is one of the few selections tested that competes for yield with Red LaSoda in Idaho. It is the result of a cross between Sangre and TXA218-7 (NDTX9580-6R x Viking). A82705-1R will be released in 1998 under the name IdaRose.

A8495-1: This long, russeted clone yielded similarly to Russet Burbank in all Idaho locations except Parma. It has excellent appearance combined with outstanding processing quality. It is the result of a cross between A77182-1 (Atlantic x Lemhi Russet) and Russet Norkotah. In 1997, A8495-1 had higher yields than Russet Burbank at all locations except Kimberly and Parma (Tables 1-5). In every trial, it had a higher percentage of U.S. No. 1's, fewer internal problems, and higher specific gravity. It had the best overall fry color of any russet clone tested. This selection will likely be released in late 1998. In 1997 there were 42 acres of certified seed produced.

AO82611-7: This long, russeted clone is an Oregon selection of an Aberdeen seedling. It was the result of a cross between Butte and A77268-4 (Lemhi Russet x Norchip). Oregon is currently pursuing release of this clone under the name Umatilla Russet. In 1997, it generally had high yield, good grade, high specific gravity, and showed some resistance to sugar ends (Tables 1-5). This is consistent with previous years. AO82611-7 appears to be adapted to areas with long, warm growing seasons and performed very well at Parma.

COO83008-1: This long, russeted clone is an Oregon selection of a Colorado seedling. It resulted from a cross of Century Russet and WNC672-2 (A6334-20 x Lenape). Release is currently being pursued by Oregon using the name Russet Legend. COO83008-1 had higher yield than Russet Burbank at Rexburg and Shelley (Tables 1,2). It also had a very high percentage of U.S. NO. 1's and excellent internal quality. In 1997, a persistent problem with stem end discoloration was again observed in tubers stored for more than three months. Some tendency for this problem had been seen in past years.

NDO1496-1: This round, white chipping clone is an Oregon selection of a North Dakota seedling. It is the result of a cross between ND292-1 and A77268-1 (Lemhi Russet x Norchip). Due to susceptibility to shatter bruise, Oregon researchers dropped NDO1496-1, and it is now being evaluated by the Idaho industry. In 1997, it was grown in one trial at Aberdeen where it had lower yield and smaller size than Atlantic or Chipeta (Table 8). It had specific gravity similar to Atlantic and chip color better than any of the standard varieties. NDO1496-1 has shown the ability to chip acceptably from cold storage and to recondition well. It has

performed well in processor trials and will likely be released in 1998.

IDAHO TABLE 1. Performance of russet potato selections on the farm of Gary Summers at Rexburg, Idaho, in 1997.

Clone	Total Yield	U.S. No. 1's			Culls & U.S.No. 2	Specific Gravity	Hollow Heart ¹ Brown Center	Blackspot ²		Shatter ³		Fry 40 ⁴		Fry 45 ⁴	
		Yield	%	> 12 oz	< 4 oz			Bruise	Bruise	Bruise	Bruise	Color	Color	Color	Color
	-----cwt/acre-----			----- % -----											
Russet Burbank	416	258	62	17	32	10	28	1.086	21	4.4	4.1	3.7	1.5		
Frontier Russet	376	331	88	29	47	6	6	1.088	0	3.6	3.2	3.8	2.8		
Ranger Russet	453	376	83	34	40	3	14	1.095	0	4.9	3.6	3.3	1.6		
Russet Norkotah	229	186	81	14	43	15	4	1.072	0	4.2	3.7	3.9	2.6		
A82360-7	549	407	74	24	36	9	17	1.099	0	3.6	4.0	2.7	1.3		
A8495-1	456	382	84	36	39	5	11	1.091	0	4.4	3.9	2.7	1.3		
A86102-6	512	424	83	39	35	5	12	1.088	0	1.6	4.6	3.9	2.9		
A8792-1	554	423	76	46	25	3	21	1.101	10	4.1	4.0	3.4	1.9		
A9045-7	476	428	90	47	36	4	7	1.092	0	4.6	3.7	3.8	1.9		
AO82611-7	407	280	69	32	29	7	24	1.091	0	4.4	4.2	3.1	2.3		
COO83008-1	424	393	93	60	28	2	5	1.092	4	3.4	3.9	3.3	1.5		
Mean	441	353	80	34	35	6	14	1.092	3	3.9	3.9	3.4	2.0		
LSD (.05)	51	48						0.004		0.2	0.3	0.4	0.4		

¹ Hollow heart/brown center was determined by cutting tubers > 12 oz.² Blackspot bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.³ Shatter bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.⁴ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40 or 45°F.

IDAHO TABLE 2. Performance of russet potato selections on the farm of Reed Searle at Shelley, Idaho, in 1997.

Clone	Total Yield	U.S. No. 1's			Culls &		Specific Gravity	Hollow Heart ¹		Blackspot ²		Shatter ³		Fry 40 ⁴		Fry 45 ⁴	
		Yield	%	>12 oz	6 to 12 oz	<4 oz		Brown Center	- % -	Bruise	- % -	Bruise	- % -	Color	- % -	Color	- % -
	-----cwt/acre-----																
Russet Burbank	326	158	48	6	25	23	29	1.083	22	4.2	4.5	4.5	3.9	1.9			
Ranger Russet	463	382	83	22	48	8	10	1.094	0	4.9	4.1	4.1	3.7	1.9			
Russet Norkotah	242	166	69	2	38	26	6	1.075	0	4.6	3.5	3.5	4.0	2.6			
TXNS278	258	175	68	9	34	26	7	1.077	2	4.6	3.4	3.4	4.0	3.3			
A82360-7	630	490	78	16	39	15	8	1.098	2	3.6	4.0	4.0	2.7	1.5			
A8495-1	400	309	77	10	43	19	4	1.093	2	4.7	4.2	4.2	2.6	1.3			
A86102-6	579	417	72	19	40	12	16	1.091	0	2.5	4.4	4.4	3.9	3.3			
A8792-1	529	426	81	34	38	5	14	1.099	15	3.7	4.3	4.3	3.5	2.2			
AO82611-7	380	226	59	7	36	16	24	1.089	0	4.3	4.1	4.1	3.5	2.3			
COA90101-2	312	231	74	24	38	11	15	1.090	30	4.2	3.2	3.2	3.6	2.2			
COO83008-1	399	359	90	36	44	5	5	1.094	7	3.2	4.1	4.1	3.2	1.4			
Mean	411	303	74	18	39	14	12	1.090	7	4.0	3.9	3.9	3.5	2.2			
LSD (.05)	64	70						0.004		0.3	0.3	0.3	0.3	0.4			

¹ Hollow heart/brown center was determined by cutting tubers > 12 oz.

² Blackspot bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.

³ Shatter bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.

⁴ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40 or 45°F.

IDAHO TABLE 3. Performance of russet and processing potato selections grown at Parma, Idaho, in 1997.

Clone	Total Yield	U.S. No. 1's		Culls &		Specific Gravity	Hollow Heart ¹		Sugar ² Ends	Fry ³ Color
		Yield	%	> 12 oz	6 to 12 oz		< 4 oz	U.S.No. 2		
	-----cwt/acre-----				%					
Russet Burbank	550	441	80	32	38	1.081	7	13	62	2.8
Ranger Russet	599	527	88	50	34	1.089	4	9	57	2.3
Shepody	550	486	88	67	19	1.081	2	9	64	3.2
A81473-2	538	486	90	63	25	1.086	2	8	21	2.4
A82360-7	799	632	79	30	42	1.094	6	16	20	1.8
A8495-1	481	447	93	35	50	1.089	6	1	19	2.1
A8893-1	564	476	84	54	27	1.078	2	13	23	2.5
A9045-7	609	530	87	65	19	1.086	1	11	19	2.6
AO82611-7	564	444	79	35	37	1.088	6	15	12	2.4
COA90101-2	471	375	80	46	27	1.077	8	12	10	3.4
Mean	572	484	85	48	32	1.085	4	11	31	2.6
LSD (.05)	74	62				0.006			14	0.4

¹ Hollow heart/brown center was determined by cutting tubers > 12 oz.² Percent of tubers producing fries with ends rated 3+ and at least 1 full point darker than the remainder of the fry.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

IDAHO TABLE 4. Performance of advanced russet potato selections grown at Aberdeen, Idaho, in 1997.

Clone	Total Yield	Culls and										Merit ⁴ Score	
		U.S. No. 1's		U.S. No. 2's		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry Color ³				
		Yield	%	> 12 oz	6 to 12 oz				< 4 oz	Malformed	40°F		45°F
-----cwt/acre----- % -----													
Lemhi Russet	378	306	81	23	43	17	3	1.087	32	4.7	2.2	0.7	3.3
Ranger Russet	377	332	88	4	60	10	2	1.089	0	4.2	3.2	0.9	4.0
Russet Burbank	306	205	67	9	31	26	7	1.080	19	3.4	3.0	0.9	2.8
A81386-1	350	301	86	11	50	14	0	1.095	12	3.9	2.0	0.7	4.0
A8495-1	339	312	92	16	56	8	0	1.083	4	4.3	1.3	0.3	3.8
A88236-6	393	334	85	17	49	11	4	1.082	3	3.5	2.7	1.2	3.8
A88338-1	361	336	93	43	44	3	3	1.091	12	3.0	2.5	0.9	4.0
A89384-10	339	281	83	20	48	10	7	1.090	29	3.1	2.4	1.6	3.5
A9014-2	354	315	89	11	58	10	0	1.089	4	3.7	1.5	0.4	3.8
A9057-7	397	353	89	29	48	9	2	1.088	17	3.9	2.6	1.2	3.8
A89244-3	377	324	86	13	58	8	5	1.089	0	4.2	3.3	1.1	4.0
A9045-7	319	236	74	8	42	14	12	1.095	29	3.0	2.9	0.8	2.8
A9148-3	298	244	82	14	52	10	8	1.085	0	3.6	2.9	1.8	3.3
A91186-6	308	249	81	6	41	16	3	1.083	0	3.9	1.7	0.4	3.3
A91325-6	375	341	91	17	55	9	0	1.086	27	2.5	1.6	0.4	3.8
AO82611-7	373	239	64	2	29	34	2	1.082	0	3.8	2.2	1.0	3.0
Mean	354	294	83	15	48	13	4	1.087	13	3.7	2.4	0.9	3.5
LSD (.05)	35							0.002		0.4	0.6	0.3	0.7

¹ Hollow heart was measured by cutting tubers > 12 oz.

² 1-5 scale with 1 = resistant, 5 = susceptible.

³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F until late February.

⁴ Merit Score is similar to a breeder's preference rating and is based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 5. Performance of advanced russet potato selections grown at Kimberly, Idaho, in 1997.

Clone	Total Yield	Culls and										Merit ⁴ Score	
		U.S. No. 1's		U.S. No. 2's		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry Color ³				
		Yield	%	>12 oz	6 to 12 oz				<4 oz	Malformed	40°F		45°F
-----cwt/acre-----													
Lemhi Russet Ranger Russet Russet Burbank A81386-1 A8495-1 A88236-6 A88338-1 A89384-10 A9014-2 A9057-7 A89244-3 A9045-7 A9148-3 A91186-6 A91325-6 AO82611-7	623	486	78	26	38	12	10	1.089	3	4.1	2.3	0.9	3.3
	606	491	81	39	36	6	13	1.090	0	3.3	3.5	1.3	3.3
	623	399	64	16	37	11	25	1.082	10	2.4	2.8	1.0	2.5
	633	557	88	32	43	6	5	1.084	3	4.0	1.6	0.4	3.5
	584	514	88	11	53	11	1	1.092	0	3.7	2.7	1.3	4.0
	543	424	78	24	42	8	4	1.080	0	2.9	2.5	0.9	3.0
	677	542	80	52	45	4	15	1.083	0	2.3	2.9	2.0	3.0
	509	382	75	16	42	11	13	1.091	3	2.4	2.8	1.1	3.0
	503	448	89	39	39	6	5	1.088	15	2.8	1.9	1.1	3.5
	672	591	88	27	48	7	5	1.087	5	3.1	2.7	1.0	3.3
	549	445	81	16	52	9	11	1.096	11	2.5	2.6	1.1	3.3
	632	569	90	45	37	4	7	1.088	0	3.7	3.5	1.5	4.0
	428	342	80	31	37	12	8	1.079	3	2.8	3.1	1.6	3.0
	522	438	84	11	52	10	6	1.084	0	2.5	2.3	1.0	3.3
519	462	89	14	54	10	1	1.085	3	1.5	1.9	0.6	3.3	
676	534	79	17	48	12	9	1.085	3	3.4	3.0	1.4	3.3	
Mean	581	476	82	26	43	9	9	1.086	4	3.0	2.6	1.1	3.3
LSD (.05)	75							0.004		0.5	0.6	0.5	0.7

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F until late February.⁴ Merit Score is similar to a breeder's preference rating and is based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 6. Performance of russet potato selections in the Idaho location of the Tri-State (Idaho, Oregon, Washington) variety trial grown at Aberdeen, Idaho, in 1997.

Clone	Total Yield	U.S. No. 1's		Culls & U.S.No. 2	Specific Gravity	Hollow Heart ¹		Blackspot ² Bruise	Shatter ³ Bruise	Fry 40 ⁴ Color	Fry 45 ⁴ Color
		Yield	%			Brown Center	- % -				
	-----cwt/acre-----		----- % -----								
Russet Burbank	465	345	74	11	15	1.085	61	4.1	4.0	4.0	1.6
Ranger Russet	450	387	86	23	9	1.087	0	4.3	3.7	3.8	1.7
A83008-8	325	230	71	46	26	1.093	10	4.0	2.5	3.2	1.5
A8836-5	599	456	76	33	19	1.087	0	3.0	3.3	3.7	1.2
A88338-1	499	439	88	49	9	1.088	3	1.9	3.1	4.0	1.4
AO89128-4	437	360	82	7	6	1.094	0	2.5	3.8	3.2	0.8
Mean	463	370	80	28	14	1.089	13	3.3	3.4	3.6	1.4
LSD (.05)	100	103				0.005		0.5	0.4	0.2	0.4

¹ Hollow heart/brown center was determined by cutting tubers > 12 oz.

² Blackspot bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.

³ Shatter bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.

⁴ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40 or 45°F.

IDAHO TABLE 7. Performance of chipping potato selections in the Idaho location of the Western Regional Chipping Trial grown at Aberdeen, Idaho, in 1997.

Clone	Total Yield	U.S. No. 1's				Culls & U.S.No. 2		Specific Gravity	Hollow Heart ¹ Brown Center	Blackspot ² Bruise	Shatter ³ Bruise	Chip 40 ⁴		Chip 50 ⁴	
		Yield	%	----- % -----		< 4 oz	U.S.No. 2					Color	Color		
				>12 oz	6 to 12 oz										
		-----cwt/acre-----													
Atlantic	431	390	90	27	51	5	4	1.096	18	2.5	3.9	3.8	2.3		
Chipeta	586	476	81	49	28	3	16	1.088	0	2.8	4.2	3.9	1.6		
A88431-1	501	427	85	13	55	11	4	1.104	3	2.3	4.1	2.0	1.0		
A8961-14	604	562	93	39	47	4	3	1.083	6	1.8	4.0	3.5	2.1		
AC88357-3	268	193	72	5	42	25	3	1.084	0	2.2	3.9	3.5	1.5		
NorValley	410	296	72	5	46	21	6	1.080	3	2.9	4.0	3.2	1.3		
MEAN	467	391	82	23	45	12	6	1.089	5	2.4	4.0	3.3	1.6		
LSD (.05)	64	64						0.004		0.5	0.4	0.7	0.5		

¹ Hollow heart/brown center was determined by cutting tubers > 12 oz.² Blackspot bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.³ Shatter bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.⁴ Chip color grade score with lower score indicating lighter color; potatoes stored at 40 or 50°F.

IDAHO TABLE 8. Performance of advanced chipping potato selections grown at Aberdeen, Idaho, in 1997.

Clone	Total Yield	U.S. No. 1's		Culls and		Specific Gravity	Hollow ¹ Heart	Blackspot ²		Chip Color ³		Merit ⁴ Score		
		Yield	%	4 to 12 oz	U.S. No. 2's			Bruise	Feb45°F	Dec40°F				
					<4 oz					Malformed	Feb45°F		Dec40°F	
	-----cwt/acre-----													
Chipeta	384	349	91	20	71	5	4	1.088	8	3.8	1.6	3.9	1.0	4.0
Gemchip	347	271	78	3	75	21	0	1.086	0	3.9	2.1	3.9	1.5	3.3
A88431-1	298	238	80	7	73	20	0	1.109	0	3.3	1.2	2.6	1.3	2.3
A90450-16	436	292	67	3	64	33	0	1.101	30	2.9	1.6	2.8	1.1	3.0
A90467-14	386	282	73	4	70	26	0	1.104	25	3.4	1.0	2.3	1.0	3.5
A91746-8	398	338	85	12	73	14	1	1.095	0	3.1	1.0	2.3	1.0	4.3
A91790-13	401	297	74	4	69	26	0	1.093	0	2.3	1.1	2.4	1.0	4.0
NDO1496-1	330	221	68	0	68	32	0	1.090	0	3.1	1.1	3.4	1.0	3.0
Mean	373	287	77	7	70	22	1	1.096	7	3.2	1.3	3.0	1.1	3.4
LSD (.05)	30							0.003		0.5	0.3	0.5	0.4	0.4

¹ Hollow heart was measured by cutting tubers > 12 oz.

² 1-5 scale with 1 = resistant, 5 = susceptible.

³ Chip color rated using the SFA color chart, 0-5 scale with 2 or less considered acceptable. Tubers stored at 40°F or 45°F. Tubers held at 40°F were also reconditioned for 3 weeks at 65°F.

⁴ Merit score is similar to a breeders' preference rating and is based on appearance and size of field-run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 9. Performance of advanced high dry matter potato selections grown at Aberdeen, Idaho, in 1997.

Clone	Total Yield	U.S. No. 1's		Culls & U.S. No. 2's		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry ³ Color	Dry Matter Yield
		Yield	%	>12 oz	6 to 12 oz					
	-----cwt/acre-----				%					lb/A
Lemhi Russet	401	333	83	14	53	1.087	37	4.7	0.6	8,910
Ranger Russet	358	290	81	5	53	1.088	0	4.4	0.8	8,080
Russet Burbank	317	203	64	5	37	1.080	42	3.4	0.8	6,650
A82360-7	495	381	77	9	43	1.094	7	3.8	0.4	11,690
A8836-5	423	351	83	17	52	1.093	0	3.6	0.5	9,900
A89219-7	462	425	92	34	51	1.090	17	3.9	0.7	10,570
A89282-2	313	269	86	20	43	1.090	7	1.7	1.3	7,210
A8792-1	421	320	76	18	46	1.098	14	3.3	0.5	10,300
A89216-11	395	304	77	18	50	1.101	31	2.7	0.9	9,900
A91015-7	387	344	89	26	50	1.092	37	3.8	1.3	8,990
A91030-17	465	419	90	34	47	1.096	20	3.0	1.4	11,210
A91039-1	408	379	93	37	49	1.090	10	1.6	0.8	9,360
Mean	404	335	83	20	48	1.092	18	3.3	0.8	9,400
LSD (.05)	47					0.003		0.5	0.2	1,200

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 rating with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

IDAHO TABLE 10. Performance of advanced high dry matter potato selections grown at Kimberly, Idaho, in 1997.

Clone	Total Yield	U.S. No. 1's		Culls & U.S. No. 2's		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry ³ Color	Dry Matter Yield
		Yield	%	> 12 oz	6 to 12 oz					
	-----cwt/acre-----				%		-----			lb/A
Lemhi Russet	556	478	86	29	45	1.089	5	3.9	0.7	12,560
Ranger Russet	561	466	83	37	37	1.086	0	3.3	0.8	12,340
Russet Burbank	551	353	64	19	37	1.078	0	2.7	0.9	11,300
A82360-7	869	704	81	7	55	1.096	0	3.1	0.6	20,850
A8836-5	559	447	80	29	41	1.086	0	3.0	0.7	12,350
A89219-7	655	563	86	42	35	1.084	5	3.1	1.4	14,200
A89282-2	541	417	77	18	41	1.091	0	1.0	1.6	12,510
A8792-1	639	492	77	39	32	1.094	10	2.6	0.7	15,080
A89216-11	602	452	75	36	33	1.098	0	1.7	1.4	14,730
A91015-7	582	477	82	29	40	1.088	3	2.5	0.9	13,060
A91030-17	609	542	89	35	40	1.095	0	2.5	1.3	14,530
A91039-1	593	551	93	61	29	1.085	8	1.6	1.2	13,010
Mean	610	494	81	32	39	1.089	3	2.7	1.0	13,880
LSD (.05)	96					0.005		0.6	0.4	2,400

¹ Hollow heart was measured by cutting tubers > 12 oz.

² 1-5 rating with 1 = resistant, 5 = susceptible.

³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

IDAHO TABLE 11. Sensory evaluations of baked potatoes from breeding selections grown at Aberdeen, Idaho, in 1997.¹

Clone	At harvest			Overall	After 5 Months Storage (40°F)			
	Color	Texture	Flavor		Color	Texture	Flavor	Overall
Russet Burbank	6.1 d	5.9 a	5.7 ab	5.8 a	6.3 b	6.1 a	5.7 b	5.9 b
A8495-1	6.2 cd	5.9 a	6.0 a	5.9 a	6.6 ab	6.1 a	6.2 a	6.2 a
A88338-1	6.4 abc	5.7 ab	5.6 b	5.7 a	6.4 b	6.0 a	5.9 ab	6.0 ab
A82360-7	6.4 ab	5.6 b	5.6 b	5.6 a	6.7 a	5.9 a	6.0 ab	5.9 ab
A8792-1	6.2 bcd	5.4 b	5.6 b	5.6 a	6.7 a	5.9 a	6.0 ab	6.0 ab
AO82611-7	6.6 a	5.5 b	5.4 b	5.6 a	6.8 a	5.9 a	5.7 b	5.9 b

¹ Evaluations were made by trained panelists using double blind procedures. Approximately 100 tests were done on each clone. Each baked potato was rated for color, texture, flavor, and overall appeal. Ratings were made using a 1-9 scale with 9 = best. Means were separated using Duncan's Multiple Range Test, and means followed by the same letter are not significantly different.

IDAHO TABLE 12. Reaction of potato clones to the herbicide metribuzin (Sencor/Lexone) in 1997.¹

Clone	Plant Injury ² 21 Days Following Application	Predicted ³ Yield Reduction Due to Injury ²	Relative ⁴ Susceptibility to Injury
----- % -----			
<u>Russet and Long Whites</u>			
Russet Burbank	35	15	MR
Frontier Russet	50	29	MS
Russet Norkotah	13	0	VR
Shepody	99	100	VS
A82360-7	25	8	R
A83008-8	5	0	VR
A8495-1	35	15	MR
A84118-3	13	0	VR
A86102-6	10	0	VR
A8792-1	13	0	VR
A8836-5	3	0	VR
A88338-1	45	23	MR
AC87084-3	99	100	VS
AO82611-7	15	0	R
AO87277-6	55	33	MS
AO89128-4	10	0	VR
CO85026-4	35	14	MR
CO87009-4	95	77	VS
COO83008-1	25	8	R
NDD840-1	3	0	VR
TX1385-12Ru	25	6	R
TXAV657-27Ru	5	0	VR
<u>Round White Chippers</u>			
Atlantic	88	62	S
Chipeta	15	0	VR
NorValley	60	32	MS
A88431-1	75	46	MS
A8961-14	40	19	MR
ATX85404-8	95	75	VS
AC88357-3	80	52	S
NDO1496-1	45	24	MR
<u>Reds</u>			
Dark Red Norland	50	29	MS
Red Lasoda	65	49	MS
A82705-1R	40	22	MR
CO86142-3	78	50	MS
CO86218-2	45	23	MR
COO86107-1R	70	41	MS
Dt6063-1R	55	33	MS
NDO2438-6R	45	23	MR
NDO2686-6R	75	51	S

¹ Metribuzin applied postemergence (8-12 inch plants) at a rate of 1.0 lb a.i./A (17.5 gpa, 30 psi).² Plant injury was recorded as the percentage of foliage from an average plant in each plot that showed typical metribuzin symptoms (chlorosis, necrosis, vein clearing, etc.)³ Predicted yield reduction is expressed as percent loss compared to untreated plots and was calculated using the following equation: Yield reduction = $[1 - (1.142 + 0.176 (\text{Log} (\text{plant height treated}/\text{plant height untreated})) - 0.00796 (\text{plant injury}))] \times 100$.⁴ VR = very resistant, R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible.

IDAHO TABLE 13. Evaluation of potato cultivars and breeding selections for resistance to field diseases and soft rot, in 1997.

	Cultivars or Selections	Verticillium Wilt ¹	Early Blight ²	Common Scab ³	Erwinia Soft Rot ⁴
NAMED CULTIVARS	A8495-1	4.5	4.7	1.3	2.4
	A81473-2.....	1.8	3.2	0.0	1.6
	AO82611-7 (Umatilla).....	6.2	5.9	0.0	-
	COO83008-1 (Legend).....	2.7	3.9	0.0	-
	Atlantic	6.7	6.2	2.0	3.6
	Ranger Russet	3.7	4.0	2.0	2.8
	Red LaSoda	5.5	6.2	3.7	3.7
	Russet Burbank.....	5.7	4.7	0.0	3.6
	Russet Norkotah	8.5	8.3	0.0	3.9
	Shepody	6.3	6.7	4.0	4.3
WESTERN REGIONAL TRIAL ENTRIES	A82360-7.....	2.5	3.5	2.0	3.1
	A8792-1	3.9	4.3	1.0	3.5
	AC87084-3.....	3.8	4.0	0.3	3.2
	AO87277-6	5.7	5.4	0.7	4.6
	CO85026-4.....	2.2	3.3	1.7	3.2
	COO87009-4	6.5	6.4	0.0	3.3
	CORN8.....	7.4	6.9	0.0	4.1
	NDD840-1	4.8	5.2	1.0	4.5
	TX1385-12Ru	4.0	6.7	0.7	3.5
	TXAV657-27Ru	5.2	5.5	2.0	3.9
	TXNS112	7.4	6.7	0.0	3.6
	TXNS223	7.7	6.8	0.0	3.8
TRI STATE TRIAL ENTRIES	TXNS278	8.0	7.3	0.0	3.3
	A83008-8.....	1.3	2.4	0.3	1.9
	A8836-5	2.7	3.8	0.3	3.3
	A88338-1.....	2.2	3.3	0.0	2.2
CHIP TRIAL ENTRIES	AO89128-4	5.2	4.8	1.7	2.8
	A88431-1.....	3.5	4.7	3.7	3.7
	A8961-14.....	2.2	3.3	4.7	2.7
	AC88357-3.....	8.3	8.0	2.3	4.5
	LSD (p=0.05)	1.4	1.3	1.2	1.5

¹ Verticillium wilt 0 to 9 scale: 0 = none; 9 = >90% stems dead or dying with typical Verticillium wilt symptoms.

² Early blight 0 to 9 scale: 0 = none; 9 = >90% leaflets with severe blight lesions or necrosis due to early blight.

³ Common scab 0 to 5 scale; 0 = none; TR = Trace; 5 = all tubers unmarketable due to scab.

⁴ Erwinia soft rot 0 to 5 scale; 0 = no rot; 5 = all tubers >50% decayed.

IDAHO TABLE 14. Evaluation of varieties, advanced selections, and resistant germplasm for foliar late blight at Mt. Vernon, Washington, in 1997.

Clone	Average AUDPC ¹	Clone	Average AUDPC ¹
Standards		Regional Trial Entries	
Bzura	602 abc	A82360-7	981 b-f
Brador	856 a-e	A8792-1	1134 c-h
Alpha	789 a-d	AC87084-3	1304 d-j
Elba	887 a-e	AO87277-6	2049 l-p
COO83008-1	1250 c-i	CO85026-4	1099 c-g
Kennebec	1483 e-l	CO87009-4	1573 f-m
Russet Burbank	2111 l-p	CORN-3	1769 g-n
Ranger Russet	1941 j-o	CORN-8	2307 nop
Shepody	2214 m-p	NDD840-1	1640 f-n
White Rose	1961 j-o	TX1385-12Ru	2706 p
Norchip	2544 op	TXAV657-27Ru	1919 i-o
Russet Norkotah	2141 l-p	TXNS112	2236 m-p
Red LaSoda	1953 j-o	TXNS223	2542 op
		TXNS278	1790 h-n
Aberdeen Program Entries		Regional Chipping Entries	
A8495-1	2006 l-o	Atlantic	1987 k-o
A84118-3	664 a-d	Chipeta	1833 l-n
A90586-11	359 ab	A88431-1	1480 e-l
AWN86524-5	304 a	A8961-14	1726 g-n
		AC88357-3	1920 i-o
Tri-State Trial Entries			
A83008-8	2225 m-p		
A8836-5	2119 l-p		
A88338-1	1329 d-k		
AO89128-4	1925 j-o		
AO82611-7	2204 m-p		

¹ AUDPC = Area under the disease progress curve. Clone means followed by the same letter are not significantly ($p=.05$) different.

IDAHO TABLE 15. Response to late blight pressure at Corvallis, Oregon, 1997.

Entry	Foliar Rating ¹	% Tuber Infect ²	Relative Tuber Rot Susceptibility	Rot Index ³
Russet Burbank	93.8	10.0	MR	1.8
Ranger Russet	95.0	42.5	VS	4.8
Russet Norkotah	97.5	27.5	S	4.8
A82360-7	96.3	10.0	MR	1.0
A8495-1	77.5	17.5	MS	1.8
A8792-1	96.3	2.5	R	1.0
A88338-1	52.0	0.0	R	0.5
A8836-5	86.3	35.0	S	4.8
AC87084-3	94.8	17.5	MS	1.8
AO82611-7	100.0	2.5	R	0.5
AO87277-6	97.5	35.0	S	5.0
AO89128-4	100.0	35.0	S	6.8
CO85026-4	75.0	15.0	MS	2.8
CO87009-4	97.5	37.5	S	4.8
COO83008-1	86.0	5.0	R	0.8
CORN-3	96.3	17.5	MS	3.0
CORN-8	96.3	27.5	S	4.0
NDD840-1	97.5	32.5	S	6.0
TXAV657-27	90.0	15.0	MS	1.8
TX1385-12	97.3	52.5	VS	7.0
TXNS-112	100.0	37.5	S	6.0
TXNS-223	96.3	20.0	S	2.8
TXNS-278	90.0	17.5	MS	2.3
Atlantic	90.0	7.5	MR	1.3
Chipeta	92.5	32.5	S	5.3
FL-1625	93.5	12.5	MR	2.0
FL-1851	100.0	10.0	MR	1.8
Mean	92.0	21.3		3.2
CV (%)	9.9	63.9		77.9
LSD (0.05)	12.9	19.2		3.5

¹ 0 = 0% of leaf surface infected; 50 = 50% of leaf surface involved; 100 = 100% of leaf surface necrotic on 9/4/97.

² Percent of tubers showing late blight infection based on 10 randomly selected tubers/plot.

³ Rot severity rating (includes secondary infection): 1 = healthy tubers; 10 = uncontrollable decay.

G.A. Porter, J.A. Sisson, B. Bradbury, B. MacFarlane, and P. Wardwell
University of Maine; Orono, ME 04469

Introduction: Potato variety trials were conducted at three locations in Maine as part of the NE184 Regional Project (Development of New Potato Clones for Environmental and Economic Sustainability in the Northeast). Thirty-eight potato varieties and clones were tested at Aroostook Research Farm, Presque Isle, Maine. Eighteen NE184 varieties and lines were tested on a commercial farm in East Corinth (central Maine), while thirty varieties and lines were tested on a commercial farm in St. Agatha (northern Maine). The primary objective of all of the Maine trials is to determine performance, quality, and storage characteristics of promising potato clones and new varieties in Maine.

Methods: Single-row plots, 25 feet long, were utilized for the NE184 trials. All trials were hand planted using randomized complete block designs and four replications. The seedpiece spacing used for each line is listed in subsequent tables. Details of important management practices are presented in Maine Table 1. At the Presque Isle site the varieties were grouped so that separate tests could be vinekilled and harvested based on maturity classification. Remaining cultural practices were similar to those used on commercial farms in the area. Specific gravity was determined at harvest using the weight-in-air/weight-in-water method. Hollow heart ratings indicate the number of hollow tubers observed per 40 large tubers examined. Unless noted otherwise chip color evaluations were conducted during December following storage at 50°F. Chips were fried at 350°F for three minutes and evaluated using an Agtron M35, calibrated with the black "0" disk = 0 and the white "90" disk = 90. Chips were crushed and reported values are means from four replicates per variety. Each sample was read three times with thorough mixing between readings.

Results:

Rainfall, General Growth, and Plant Stands.

Rainfall by month and location is listed in Maine Table 2. Plant growth was generally very vigorous at the northern Aroostook County site. Yields were much higher at this site than the other two. Early-dying problems were observed at the central Maine and Aroostook Research Farm sites. Plant stand equaled or exceeded 90% of targets for most lines. Exceptions at Aroostook Research Farm were: Katahdin (82%), Kennebec (79%), NorDonna (84%), and Yukon Gold (76%). Exceptions at East Corinth were: Katahdin (89%), Yukon Gold (84%), and AF1424-7 (87%). Exceptions at St. Agatha were: Katahdin (89%) and NorDonna (86%).

Aroostook Research Farm NE184 Regional Potato Variety Trials. Many of the lines in the early and mid-season tests died early due to early-dying disorder and/or other stresses. We received negligible rainfall over a one-month period beginning July 10. Dark Red Norland, Superior, AF1424-7, and AF1565-12 were particularly early maturing in the early trial. Only Quaggy Joe exceeded Atlantic in total and U.S.#1 yields (Maine Table 3). U.S. #1 yields of Itasca, Monona, NorDonna, Superior, and AF1424-7 were significantly lower than Atlantic. Atlantic, Cherry Red, and AF1424-7 had relatively high specific gravities. All lines sized poorly; however, Atlantic, Chieftain, and Kennebec sized better than the remaining lines. Tubers of Atlantic, Cherry Red, Dark Red Norland, Quaggy Joe, Superior, and AF1437-1 were rated particularly attractive (Maine Table 4). There were relatively few external tuber defects in this trial and no hollow heart was detected. Atlantic, Itasca, Kennebec, Monona, Superior, and AF1424-7 had very good chip color scores. Although Quaggy Joe stood above the others in yield, none of the test lines performed exceptionally in this test.

In the mid-season test, AF1433-4 died very early. Niska and NY87 were also quite early maturing. None of the lines exceeded Atlantic in total or U.S.#1 yields (Maine Table 5). Kennebec, NorValley, B0564-8, NY87, and NY103 yields were equal to those of Atlantic, while Snowden, and AF1433-4 were very low yielding. All lines sized poorly; however, Kennebec sized better than the remaining lines. MaineChip, Niska, NorValley, Snowden, AF1433-4, and NY102 had particularly small tubers. Atlantic, MaineChip, Snowden, B0766-3, and NY102 specific gravities exceeded 1.080. There were relatively few external tuber defects and little hollow heart was detected in this trial (Maine Table 6). Scab was the major tuber defect in Kennebec. Misshapen tubers were prevalent in NorValley and NY103. Growth cracks were common in NY102. Most lines had significantly better chip color scores than Atlantic; however, Kennebec and B0564-8 scores were equal to Atlantic. Considering all attributes, the best performing lines in this test were NorValley, B0564-8, NY87, and NY103.

In the late maturity trial, Yukon Gold and B0856-4 senesced relatively early. Lines with particularly high U.S.#1 yields were AF1480-5, and AF1615-1 (Maine Table 7). AF1480-5 had the best tuber size for tablestock use. All of the test lines had specific gravities that equaled or exceeded those of Katahdin. Tubers of Yukon Gold, AF1480-5, and AF1615-1 were rated particularly attractive (Maine Table 8). Yukon Gold had more than 5% misshapen tubers. Relatively little hollow heart was

detected in the test. The best tablestock prospects in this test were AF1480-5 and AF1615-1.

In the russet or long-type variety test, growth was vigorous for most of the lines. B1004-8 had relatively small tops. Russet Burbank and Century Russet were late maturing, while the remainder had mid-season maturity. None of the lines produced total yields which exceeded Russet Burbank (Maine Table 7). Most of the test lines, produced U.S. #1 yields which were similar to those of Russet Burbank; however, B1004-8 and W1099Rus had significantly lower U.S. #1 yields. B9922-11 sized very well. Although most lines had lower specific gravities than Russet Burbank, Century Russet and B1004-8 were equal and B9922-11 had higher specific gravity. Tubers of Century Russet and B9922-11 were particularly attractive (Maine Table 8). W1099Rus had severe blackheart problems. Russet Norkotah and W1099Rus had significantly poorer chip color scores than Russet Burbank. Overall, Century Russet and B9922-11 were the best prospects in this trial.

Central Maine NE184 Regional Potato Variety Trial. Many of the lines in this test died early due to early-dying disorder and/or other stresses. This was especially true for Superior, AF1424-7, AF1433-4, and B0564-8. Katahdin, Kennebec, and Monona total yields were significantly higher than Atlantic (Maine Table 9). U.S.#1 yields of Katahdin, Kennebec, B0766-3, and NY102 were significantly higher than Atlantic. AF1424-7, AF1433-4, and B0564-9 were significantly lower yielding than Atlantic. Atlantic, MaineChip, Snowden, AF1424-7, B0766-3, and NY102 specific gravities exceeded 1.090. Scab was the major tuber defect in the trial and most lines had greater than 10% of yield affected by scab (Maine Table 10). Lines with less than 10% scab were Itasca, Snowden, Superior, and B0564-8. Atlantic, Katahdin, NorValley, and AF1424-7 had greater than 3% hollow heart out of 40 large tubers examined. MaineChip, Niska, NorValley, Snowden, AF1433-4, B0766-3, and NY87 had significantly better chip color scores than Atlantic. Considering all attributes, the best performing chipping lines in this test were Snowden, NorValley, B0766-3, NY87, and NY102.

Northern Aroostook County NE184 Regional Potato Variety Trials. Well-distributed rainfall and good soil conditions resulted in vigorous growth for most lines; however, AF1424-7 and AF1565-12 had relatively small tops. AF1565-12 was the earliest maturing line in the test, while Kennebec, AF1480-5, and AF1615-1 were quite late maturing. Lines with particularly high U.S.#1 yields were Chieftain, Dark Red Norland, Itasca, Kennebec, NorValley, Superior, AF1480-5, AF1615-1, B0811-13, and NY87 (Maine Table 11). Most of the test lines had specific gravities that equaled those of Katahdin; however, Chieftain, NorDonna, Quaggy Joe, Red Ruby, AF1437-1, AF1565-12, and B0811-13 were significantly lower. Most

lines sized well; however, NorValley, Snowden, AF1433-4, AF1565-12, B0856-4, and Red Ruby were smaller than most. Tubers of NorDonna, Dark Red Norland, AF1424-7, AF1480-5, B0811-13, NY87 and NY102 were rated particularly attractive (Maine Table 12). Katahdin, Cherry Red, AF1437-1, and NY103 had more than 5% scab. Quaggy Joe and AF1437-1 had more than 5% growth-cracked tubers. AF1480-5 and NY102 had greater than 5% hollow heart out of 40 large tubers examined. The best tablestock prospects in this test were Itasca, AF1615-1, B0811-13, and NY87.

In the russet or long-type variety test, growth was vigorous for most of the lines. Russet Burbank and Century Russet were very late maturing, while the remainder had mid-season maturity. Most of the test lines, produced yields which were similar to those of the standard lines; however, B1004-8 was significantly lower yielding (Maine Table 13). W1099Rus had particularly high U.S. #1 yields. B9922-11 and W1099Rus sized very well. B1004-8 and B9922-11 had higher specific gravity than Russet Burbank. Tubers of B9922-11 were particularly attractive (Maine Table 14). B9922-11 had significantly better chip color scores than Russet Burbank. Overall, W1099Rus and B9922-11 were the best prospects in this trial.

French Fry Processing from the 1996 Aroostook Research Farm Test. French fry color and texture of ten NE184 lines were evaluated under simulated processing conditions (Maine Table 15). Overall, none of the test lines produced french fries that were equal to Russet Burbank in quality. Krantz, Russet Burbank, AF1426-1, B9922-11, and W1099Rus had the best fry colors. Only B0493-8 had significantly poorer texture ratings than Russet Burbank.

Aroostook Research Farm Small-scale Storage Evaluations. Limited data on storage and processing characteristics were collected from 52 NE184 varieties and clones during the 1996-97 storage season (Maine Table 16). Chip colors from 50°F storage in February were acceptable for many lines with anticipated chipping potential. Lines with outstanding chip color from 50°F February storage were: AF1424-6 and AF1424-7 (early test); MaineChip, NorValley, AF1433-4, NY102, and W870 (medium trial); Niska (late trial). MaineChip, NY102, and W870 also produced very good chips directly from 45°F storage. None of the lines produced acceptable chips directly out of 38°F storage; however, MaineChip, Niska, Snowden, AF1424-7, AF1433-4, NY102, NY103, and W870 reconditioned well from 38°F storage.

After-cooking darkening scores are presented in Maine Table 16. Century Russet, Cherry Red, Krantz, Russet Norkotah, AF1455-9, AF1475-16, AF1565-12, ND2471-8, NY103, W870, and W1099Rus received poor color scores. Sloughing was observed in Atlantic, MaineChip, Snowden, and ND2471-8. Washed appearance

ratings were particularly outstanding for Cherry Red, Katahdin, Niska, Quaggy Joe, Red Ruby, Russet Burbank, Yukon Gold, B0493-8, B9922-11, and NY103.

Tuber dormancy was exceptionally short and early sprout growth was rapid for Krantz, NorValley, AF1433-4, AF1455-9, AF1475-16, AF1565-12, and B0564-9. Kennebec, Russet Burbank, AF1426-1, NY102, and NY103 required more than 195 days to reach the one-half-inch sprout stage. Selections with very low weight loss (2.5% or less) from 38°F storage were: Krantz, Russet Burbank, Yukon Gold, AF1433-4, and B9922-11. Selections with very low weight loss (9% or less) from 50°F storage were: Katahdin, Kennebec, NorDonna, Russet Burbank, Russet Norkotah, Yukon Gold, AF1426-1, ND2471-8, and NY103. Selections with high weight loss (18.5% or more) from 50°F storage were: Atlantic, Cherry Red, Dark Red Norland, MaineChip, NorValley, AF1433-4, AF1455-9, AF1475-16, AF1480-5, AF1481-4, AF1565-12, B0564-8, and NY87.

Promising Selections in the 1997 NE184 Regional Variety Trials. Selections that performed particularly well in the 1997 regional trials were AF1437-1 (early maturing, table line); Quaggy Joe (mid-season, tablestock round-white); B0811-13 (red-skinned, yellow-fleshed table line); NorValley, B0766-3 and NY102 (mid-season chipstock lines); NY87 and NY103 (mid-season table lines with some chipping potential); AF1615-1 (late-season table line); Century Russet (very late maturing, table russet); and B9922-11 (late maturing, dual-purpose, russet).

Maine Table 1. Trials sites and management practices for the 1997 potato variety trials.

Site information and/or Mgt. Practices	Aroostook Research Farm	Central Maine	Northern Aroostook County
Location:	Presque Isle	East Corinth	St. Agatha
Grower Cooperator:	n/a	Crane Bros.	Labrie Farms
Soil Test Results:			
pH	5.6	6.0	5.6
P (lbs/A)	18.6 MH	11.0	19.6 MH
K "	168 (3.9%) M	321 (7.1%)	255 (5.8%) MH
Mg "	444 (33.6%) VH	257 (18.0)	
Ca "	1259 (57.6%) MH	1760 (74.8%)	200 (14.3%) MH 1716 (74.5%) M H
CEC meq/100g	5.4	5.8	5.7
OM %	4.0	4.8	5.4
Previous Crop:	clover/timothy	corn	oats
Fall Tillage:	plow	soil-saver	plow
Spring Tillage:	disk/harrow	soil-saver finish harrow	soil- finisher
Planting Date:	May 28	May 27	June 2
At-planting Insectic.:	imidacloprid 1 pt/A	imidacloprid 1 pt/A	imidacloprid 1 pt/A
At-plant Fertilization:	140-140-140	130-150-144	168-168-168
Other Fertilization:	none	50 lbs N per acre topdressed	25 lbs N per acre topdressed
Herbicide Program:	1.0 linuron, PE 0.023 rimsulf., EPOST	0.56 metrib., PE 0.023 rimsul., EPOST	0.016 rimsulf. EPOST
Irrigation:	No	Yes (2X)	No
Vine Desiccation: (initial applic.)	Sept. 3 (E/ME) Sept. 8 (meds.) Sept. 19 (lates + russets)	Sept. 8	Sept. 11
Harvest:	Sept. 18 (E/ME) Sept. 26 (meds.) Oct. 3 (lates + russets)	Sept. 25	Oct. 7

Maine Table 2. 1997 Rainfall Summary.

Month	<u>Rainfall by Location and Month (inches)</u>		
	Presque Isle	East Corinth ¹	St. Agatha
May	5.44	n/a	n/a
June	2.42	3.90	3.75
July	2.92	2.85	2.50
August	4.43	3.90	2.51
Sept.	2.50	n/a	1.20
Total	17.71	n/a	n/a
Total (June 1 to August 31)	9.77	n/a	8.76

¹Rainfall data for the East Corinth site were from June 18 to August 24. This site also received two supplemental irrigation applications, once each during July and August.

Maine Table 3. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 15 early- and medium-early-maturing, white- and red-skinned varieties grown at Presque Isle, Maine - 1997. (NE184 Regional Potato Variety Trials)

Variety	Total Yield cwt/A	US#1 Yield >1 7/8" % of std.	(cwt/A) ¹	% Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)											Spec. Grav.
						1	2	3	4	5	6	1 7/8 to 4"	2 1/4 to 4"	2 1/2 to 4"			
Early/Medium-early Test - 98 days																	
Round-whites:																	
Atlantic (std)	206	184	100	117	98(10)	6-18	8	36	37	18	1	0	92	56	19	1.082	
Itasca	168	122	66	29	86(10)	6-23	25	57	16	2	0	0	75	17	2	1.071	
Kennebec	196	166	90	127	79(8)	6-19	7	22	42	29	0	0	93	71	29	1.074	
Monona	179	149	81	79	95(10)	6-19	13	41	36	10	0	0	87	46	10	1.068	
Quaggy Joe	260	227	123	129	97(10)	6-18	11	39	39	11	0	0	89	51	11	1.068	
Superior	150	127	69	52	94(10)	6-19	11	52	34	3	0	0	89	37	3	1.079	
AF1424-7	173	153	83	84	91(10)	6-24	9	42	37	12	0	0	91	49	12	1.084	
AF1437-1	203	177	96	77	97(10)	6-23	11	51	32	6	0	0	89	38	6	1.064	
AF1565-12	205	175	95	84	96(10)	6-17	11	46	35	8	0	0	89	43	8	1.076	
Reds :																	
Chieftain (std)	262	243	100	177	92(10)	6-21	6	26	45	24	0	0	94	68	24	1.066	
Cherry Red	186	163	67	75	98(10)	6-21	11	50	32	8	0	0	89	40	8	1.081	
Norland,DR	218	194	80	98	94(10)	6-17	9	46	35	9	0	0	91	45	9	1.064	
NorDonna	183	157	65	77	84(10)	6-24	14	45	34	7	0	0	86	41	7	1.069	
Red Ruby	209	178	73	69	97(10)	6-21	13	54	28	5	0	0	87	33	5	1.066	
B0811-13	205	161	66	60	93(10)	6-21	18	51	27	4	0	0	82	31	4	1.069	
W. Duncan LSD	27	27		28									3	11	7	0.002	

¹U.S.#1 yield = yield 1⁷/₈ to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1¹/₂ to 1⁷/₈"; 2=1⁷/₈ to 2¹/₄"; 3=2¹/₄ to 2¹/₂"; 4=2¹/₂ to 3¹/₄"; 5=3¹/₄ to 4"; 6=over 4".

Maine Table 4. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip colors for 15 early- and medium-early-maturing, white- and red-skinned varieties grown at Presque Isle, Maine - 1997. (NE184 Regional Potato Variety Trials)

Variety	Plant Data ¹			Tuber Data ¹			Tuber Defects (%)					Hollow		
	Size	Vine	Matur.	Skin	Appear-	Total	Sun-	Mis-	Growth	Scab	Rot	Heart	Chip	
	7-24	Matur.	at	Tex-	Shape									burn
8-20 Vinekill ture														
Early/Medium-early Test - 98 days														
Round-whites:														
Atlantic (std)	7	5	3.8	5	1	7	3.8	1.2	1.4	1.2	0.0	0.0	0	67
Itasca	5	5	2.8	8	1	4	3.0	0.1	2.5	0.4	0.0	0.0	0	68
Kennebec	7	5	3.3	8	2	6	9.1	1.7	3.9	0.6	2.8	0.0	0	66dr
Monona	5	4	3.3	8	1	5	4.6	0.9	1.5	0.0	2.2	0.0	0	68
Quaggy Joe	7	6	3.3	8	2	8	2.3	1.3	0.8	0.0	0.2	0.0	0	50dr
Superior	6	3	1.8	5	2	7	5.0	0.2	4.8	0.0	0.0	0.0	0	66
AF1424-7	6	3	3.0	8	2	6	3.6	0.2	2.2	0.0	1.2	0.0	0	69
AF1437-1	6	5	3.0	7	1	7	2.5	0.2	0.4	1.8	0.0	0.0	0	61dr
AF1565-12	5	2	2.5	8	2	5	3.9	0.3	3.3	0.2	0.1	0.0	0	60
Reds:														
Chieftain	8	6	4.0	7	2	5pr	1.0	0.0	1.0	0.0	0.0	0.0	0	45dr
Cherry Red	6	4	3.0	5	1	7dr	2.9	0.5	2.4	0.0	0.0	0.0	0	61
Norland, DR	7	3	1.5	5	2	8dr	2.3	0.1	2.1	0.1	0.0	0.0	0	63
NorDonna	6	7	4.3	7	1	6br	0.8	0.1	0.7	0.0	0.0	0.0	0	53dr
Red Ruby	7	6	3.3	8	2	6br	3.0	0.0	2.9	0.1	0.0	0.0	0	40
B0811-13	7	6	3.3	5yf	1	5dr	4.3	0.3	4.0	0.0	0.0	0.0	0	63

¹See standard NE184 rating system for key to codes. Yf=yellow fleshed; br=bright red skin; dr=dark red skin; pr=pale red skin.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color from 50F -- Agtron M35 (higher values indicate lighter color): >60 acceptable; dr = dark vascular ring. The chipping date was December 10, 1997. Waller Duncan LSD (K=100) for chip color = 4.

Maine Table 5. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 12 medium-maturing, chipping varieties grown at Presque Isle, Maine - 1997. (NE184 Regional Potato Variety Trials)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹ >1 ⁷ / ₈ " % std.	US#1 Yield (cwt/A) ¹ >2 ¹ / ₄ " % std.	Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)										Spec. Grav.
						1	2	3	4	5	6	1 ⁷ / ₈ to 4"	2 ¹ / ₄ to 4"	2 ¹ / ₂ to 4"		
Medium Test- 103 days																
Atlantic (std)	264	240	100	166	91(10)	7	34	34	21	4	0	93	59	25		1.088
Kennebec	247	211	88	175	79(8)	4	18	33	43	2	0	96	78	45		1.077
MaineChip	198	157	65	65	96(10)	20	50	26	4	0	0	80	30	4		1.092
Niska	199	162	68	53	91(10)	14	58	26	2	0	0	86	28	2		1.079
NorValley	247	195	81	92	96(10)	14	46	31	8	0	0	86	40	8		1.078
Snowden	154	126	52	50	99(10)	16	52	24	9	0	0	84	32	9		1.089
AF1433-4	172	123	51	27	98(10)	23	60	14	2	0	0	77	16	2		1.077
B0564-8	250	231	96	146	97(10)	7	36	41	17	0	0	93	57	17		1.078
B0766-3	200	180	75	103	96(10)	7	40	43	11	0	0	93	53	11		1.083
NY87	251	223	93	134	94(10)	8	39	38	15	0	0	92	53	15		1.073
NY102	213	173	72	62	93(10)	14	56	25	4	0	0	86	29	4		1.087
NY103	254	226	94	152	91(10)	4	33	50	14	0	0	96	64	14		1.077
Waller Duncan																
LSD (k=100)	50	53		56								8	17	9		0.004

¹U.S.#1 yield = yield 1⁷/₈ to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1¹/₂ to 1⁷/₈"; 2=1⁷/₈ to 2¹/₄"; 3=2¹/₄ to 2¹/₂"; 4=2¹/₂ to 3¹/₄"; 5=3¹/₄ to 4"; 6=over 4".

Maine Table 6. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 12 medium-maturing, chipping varieties grown at Presque Isle, Maine - 1997. (NE184 Regional Potato Variety Trials)

Variety	Plant Data ¹		Tuber Data ¹		Tuber Defects (%)				Hollow					
	Size 7-24	Vine Matur. 8-20	Matur. at Vinekill	Skin Tex- ture	Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Scab	Rot	Heart Rating ²	Chip Color ³
Medium Test- 103 days														
Atlantic (std)	7	5	5.3	5	1	7	3.1	0.8	1.1	0.5	0.7	0.0	1	64dr
Kennebec	8	6	4.0	7	2	8	10.7	2.6	1.6	0.5	5.9	0.0	0	65
MaineChip	5	5	5.5	6	1	6	3.9	0.8	2.8	0.3	0.0	0.0	0	71
Niska	7	4	3.8	6	1	6	5.3	0.3	2.8	0.0	2.2	0.0	0	70
NorValley	6	6	5.5	6	2	6	8.8	1.5	6.5	0.0	0.8	0.0	0	69
Snowden	5	5	5.3	5	2	4	3.4	1.0	1.0	0.5	0.9	0.1	0	67
AF1433-4	6	3	2.0	6	1	4	7.3	0.3	4.4	0.0	2.6	0.0	0	69
B0564-8	6	5	3.5	5	2	7	1.5	0.3	0.0	0.5	0.7	0.0	0	64
B0766-3	4	6	5.5	6	2	7	3.0	0.1	2.5	0.0	0.3	0.0	0	70
NY87	6	4	4.0	6	1	7	4.2	1.3	1.7	0.0	1.2	0.0	0	70
NY102	7	5	4.8	6	2	6	5.9	0.2	0.7	5.0	0.0	0.0	0	70
NY103	6	6	4.5	6	2	7	7.9	1.0	5.3	1.4	0.2	0.0	0	68dr

¹See standard NE184 rating system for key to codes. Yf=yellow fleshed.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color from 50F -- Agron M35 (higher values indicate lighter color): >60 acceptable; dr = dark vascular ring. The chipping date was December 12, 1997. Waller Duncan LSD (K=100) for chip color = 3.

Maine Table 7. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for five late-maturing and six russeted/processing varieties grown at Presque Isle, Maine - 1997. (NE184 Regional Potato Variety Trials)

Variety	Total Yield cwt/A	US#1 Yield >1 7/8" % of std.	Yield cwt/A	US#1 Yield (cwt/A) ¹ >2 1/4" % of std.	Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)										Spec. Grav.
							1	2	3	4	5	6	1 7/8 to 4"	2 1/4 to 4"	2 1/2 to 4"		
<u>Late Test - 114 days</u>																	
Katahdin (std.)	237	208	100	161	82 (8)	6-21	6	21	38	34	1	0	94	73	35	1.075	
Yukon Gold	220	192	92	158	76 (8)	6-25	6	17	36	40	1	0	94	77	42	1.083	
AF1480-5	303	282	136	248	98(10)	6-19	3	12	38	47	1	0	97	85	48	1.079	
AF1615-1	303	272	131	192	99(10)	6-20	7	28	43	22	0	0	93	65	22	1.082	
B0856-4	227	204	98	137	92(10)	6-21	9	31	43	17	0	0	91	60	17	1.075	
W. Duncan LSD	40	46		45							4			9	11	0.003	
<u>Russet/Processing Test - 114 days</u>																	
R. Burbank (std)	257	238	100	158	96(16)	6-18	34	53	12	1	0	13	1	58	36	1.081	
Century Russet	283	243	102	173	98(16)	6-18	29	59	11	1	0	12	1	62	30	1.081	
R. Norkotah	222	217	92	153	100(14)	6-21	29	65	6	0	0	6	0	61	32	1.075	
B1004-8	176	168	71	108	90(16)	6-22	36	59	4	0	0	4	0	61	27	1.082	
B9922-11	240	233	98	211	92(16)	6-21	9	54	29	7	1	37	8	74	50	1.087	
W1099Rus	261	163	68	109	100(16)	6-16	32	54	12	0	1	14	1	59	36	1.073	
W. Duncan LSD	37	61		49								9	4	13	14	0.003	

¹U.S.#1 yield of late varieties = yield from diameter listed to 4", excluding external defects. U.S.#1 yield categories for the russet/proc. varieties = yield > 1-1/2", excluding external defects, and yield > 4 oz. tubers, excluding external defects, respectively.

²Inches between seedpieces noted within parentheses.

³Size classes for late varieties: 1=1 1/2 to 1 7/8"; 2=1 7/8 to 2 1/4"; 3=2 1/4 to 2 1/2"; 4=2 1/2 to 3 1/4"; 5=3 1/4 to 4"; 6=over 4". Size classes for russeted/processing varieties: 1= <4 oz.; 2=4 to 8 oz.; 3=8 to 12 oz.; 4=12 to 16 oz.; 5= >16 oz.

Maine Table 8. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip colors for five late-maturing and six russeted/processing varieties grown at Presque Isle, Maine - 1997. (NE184 Regional Potato Variety Trials)

Variety	Plant Data ¹			Tuber Data ¹		Tuber Defects (%)							Hollow	
	Size	Vine	Matur.	Skin	Shape	Appear-	Total	Sun-	Mis-	Growth	Scab	Rot ⁴	Heart	Chip
	7-24	Matur.	at	Tex-	tube	ance	burn	shapen	cracks	cracks	Color ³			
Late Test- 114 days														
Katahdin (std)	6	6	3.8	7	1	6	6.5	2.4	1.7	0.1	2.3	0.0	0	59dr
Yukon Gold	7	4	1.0	6yf	2	7	7.8	1.3	5.6	0.0	0.9	0.0	0	54dr,ds
AF1480-5	7	7	5.8	5	2	8	4.4	0.3	3.9	0.3	0.0	0.0	1	54dr,ds
AF1615-1	6	6	5.0	6	1	7	3.7	1.3	2.3	0.1	0.0	0.0	0	51dr,ds
B0856-4	6	5	2.0	5	3	4	1.7	0.3	1.5	0.0	0.0	0.0	0	53dr,ds
Russet/Processing Test - 114 days														
R. Burbank (std)	7	8	5.0	4	7	3	7.3	0.0	5.4	1.8	0.0	0.0	1	47dr,ds
Century Russet	7	7	5.5	4	8	7	13.3	0.2	6.6	0.6	6.0	0.0	0	46dr,ds
R. Norkotah	5	5	2.5	3	6	6	2.6	0.1	1.9	0.2	0.3	0.0	0	37ds
B1004-8	4	5	2.8	2	5	4	5.2	0.0	0.8	4.4	0.0	0.0	0	48ds
B9922-11	6	6	4.5	2	6	8	2.9	0.4	2.5	0.0	0.0	0.0	0	45dr
W1099Rus	6	5	2.8	3	7	3	37.2	0.2	2.4	0.9	1.4	32.2	2	27dr,ds

¹See standard NE184 rating system for key to codes. Yf=yellow fleshed.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color from 50F -- Agtron M35 (higher values indicate lighter color): >60 acceptable; dr=dark vascular ring; ds=dark stem end. The chipping dates were December 11 and 18 for the lates and russets, respectively. Waller Duncan LSD (K=100) for chip color = 5 (late test) and 4 (russet/processing test).

⁴W1099Rus developed severe blackheart problems prior to grading and this disorder was recorded as rot during the grading process.

Table 9. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 18 varieties and lines grown at East Corinth, Maine - 1997. (NE184 Regional Potato Variety Trial)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹ >1 7/8" & of std.	% Stand (spacing) ²	Size Distribution by Class ³ (%)											Spec. Grav.	
				1	2	3	4	5	6	1 7/8 to 4"	2 1/4 to 4"	2 1/2 to 4"	4" to 4"			
Central ME Regional Test- 106 days																
Atlantic (std)	234	195	100	169	94 (10)	3	13	20	50	13	1	96	83	63	1.096	
Itasca	210	190	97	127	91 (10)	7	31	38	23	0	0	93	62	23	1.077	
Katahdin	287	246	126	205	89 (8)	4	16	32	38	6	0	92	76	43	1.079	
Kennebec	287	240	123	213	92 (8)	3	11	29	50	7	1	97	85	56	1.089	
MaineChip	232	170	87	138	95 (10)	4	18	35	33	2	0	88	70	35	1.099	
Monona	279	219	112	172	98 (10)	5	21	31	33	2	0	87	66	35	1.078	
Niska	222	168	86	119	95 (10)	8	27	31	28	2	0	89	62	31	1.085	
NorValley	273	211	108	161	97 (10)	5	22	37	26	1	1	87	64	27	1.083	
Snowden	229	206	106	150	100 (14)	5	26	40	27	1	0	95	69	29	1.097	
Superior	195	178	91	141	98 (10)	3	21	41	32	3	0	97	76	35	1.085	
Yukon Gold	253	215	110	184	84 (8)	3	14	25	46	5	0	91	77	52	1.089	
AF1424-7	160	127	65	68	87 (10)	11	41	28	17	2	0	87	46	19	1.091	
AF1433-4	176	156	80	115	97 (10)	5	25	42	27	1	0	95	70	28	1.081	
B0564-8	173	150	77	70	95 (10)	12	48	32	8	1	0	88	41	9	1.082	
B0766-3	248	230	118	187	97 (10)	4	18	33	40	5	0	96	78	45	1.093	
NY87	250	207	106	167	98 (10)	5	19	33	37	4	0	93	74	41	1.081	
NY102	254	236	121	173	94 (10)	5	26	39	28	1	0	95	69	30	1.097	
NY103	236	208	107	158	91 (10)	4	23	45	23	0	0	91	68	23	1.080	
Waller Duncan																
LSD (k=100)	42	27	27	27									ns	12	10	0.004

¹U.S.#1 yield = yield 1 7/8 to 4" excluding external defects. Tubers with scab were not excluded from U.S.#1 yield during 1997 because most scabby tubers had <5% of surface with the defect.

²Inches between seedpieces noted within parentheses.

³Size classes: 1=1 1/2 to 1 7/8"; 2=1 7/8 to 2 1/4"; 3=2 1/4 to 2 1/2"; 4=2 1/2 to 3 1/4"; 5=3 1/4 to 4"; 6=over 4".

Maine Table 10. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 18 varieties and lines grown at East Corinth, Maine - 1997. (NE184 Regional Potato Variety Variety Trial)

Variety	Plant Data ¹			Tuber Data ¹		Tuber Defects (%)							Hollow Heart Rating ²	Chip Color ³
	Size 7-28	Vine Matur. at 8-25	Vinekill ture	Skin Texture	Shape	Appear-ance	Sun-		Mis-shapen	Growth cracks	Scab	Rot		
							burn	Total						
Central ME Regional Test- 106 days														
Atlantic (std)	6	5	4.3	5	3	6	53.0	5.7	7.3	0.8	39.2	0.0	3	58dr
Itasca	4	4	1.5	7	2	6	3.6	1.0	1.8	0.0	0.8	0.0	1	53dr
Katahdin	7	6	4.8	7	3	6	34.8	4.0	1.6	0.2	24.9	4.1	9	42dr
Kennebec	7	6	3.0	8	5	6	39.4	6.9	5.8	0.5	26.1	0.0	0	52dr
MaineChip	6	5	3.8	8	2	7	47.7	4.6	5.0	2.8	27.3	8.0	0	65
Monona	5	5	3.0	8	3	4	30.2	3.0	4.8	0.0	14.1	8.2	0	59dr
Niska	7	4	2.3	7	3	3	38.6	4.1	9.6	0.9	20.9	3.0	0	64
NorValley	7	4	2.3	7	3	5	34.2	3.7	5.5	0.1	17.3	7.5	4	64dr
Snowden	6	5	3.0	5	3	5	13.5	1.4	3.2	0.7	8.2	0.0	0	65
Superior	6	2	1.0	6	3	4	9.0	0.1	5.2	0.0	3.7	0.0	1	56dr
Yukon Gold	6	5	2.3	8	3	6	48.9	1.9	2.7	0.0	38.1	6.1	1	43dr
AF1424-7	5	3	1.0	8	2	6	55.7	1.0	6.3	1.2	45.0	2.2	6	58
AF1433-4	5	2	1.0	7	2	4	39.6	0.6	6.1	0.0	32.9	0.0	0	66dr
B0564-8	6	2	1.3	5	2	5	9.9	0.7	1.6	0.0	7.6	0.0	0	63
B0766-3	6	6	4.3	6	2	5	16.9	1.2	2.4	0.0	13.2	0.1	0	64
NY87	6	4	2.0	7	3	7	24.0	4.6	5.7	0.0	11.7	2.0	0	65dr
NY102	7	6	3.8	8	2	7	21.0	1.0	1.0	0.0	19.0	0.0	0	62dr
NY103	5	5	2.5	8	3	6	24.7	1.0	1.4	0.1	17.2	4.9	0	60dr

¹See standard NE184 rating system for key to codes.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color from 50F -- Agtron M35 (higher values indicate lighter color): >60 acceptable; dr = dark vascular ring. The chipping date was December 8, 1997. Waller Duncan LSD (K=100) for chip color = 5.

Maine Table 11. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 24 round-white and red-skinned NE-184 regional trial lines grown at St. Agatha, Maine - 1997.

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) ¹ & Stand >1 ⁷ / ₈ " & of >2 ¹ / ₄ " std.	(spacing) ² 7-2 7-11	Size Distribution by Class ³ (%)													Spec. 2 ¹ / ₂ to 4" Grav.	
				1 ⁷ / ₈ to 4" to 4" to 4"														
				1	2	3	4	5	6	1 ⁷ / ₈ to 4"	2 ¹ / ₄ to 4"	2 ¹ / ₂ to 4"						
St. Agatha NE-184 Round-whites and Reds - 101 days																		
Atlantic (std)	330	272	100	246	92	99	(10)	3	9	19	49	18	2	95	86	67	1.077	
Itasca	409	374	138	330	93	95	(10)	3	11	23	56	6	0	97	85	62	1.067	
Katahdin	414	283	104	260	88	89	(8)	4	8	15	53	19	1	94	87	72	1.070	
Kennebec	484	408	150	387	96	94	(8)	1	5	10	54	29	1	98	93	83	1.071	
NorValley	449	394	145	339	94	95	(10)	4	13	29	47	6	0	95	82	53	1.071	
Quaggy Joe	458	319	117	287	96	96	(10)	4	10	19	48	18	1	95	85	66	1.060	
Snowden	297	280	103	243	93	98	(14)	2	13	32	47	7	0	98	85	53	1.084	
Superior	484	431	158	408	99	99	(10)	1	5	16	58	17	2	97	92	75	1.075	
AF1424-7	273	245	90	225	91	94	(10)	2	8	17	60	13	0	98	90	73	1.075	
AF1433-4	339	312	115	265	89	95	(10)	4	15	33	45	3	1	96	81	48	1.069	
AF1437-1	388	292	107	262	91	98	(10)	2	11	28	48	11	0	98	87	60	1.055	
AF1480-5	434	389	143	344	99	99	(10)	2	11	22	58	6	0	98	86	64	1.073	
AF1565-12	385	327	120	285	96	98	(10)	5	12	25	48	9	1	94	82	57	1.064	
AF1615-1	483	433	159	380	97	98	(10)	4	12	30	52	3	0	96	85	54	1.070	
B0856-4	333	307	113	248	95	98	(10)	4	18	41	36	1	0	96	78	36	1.073	
NY87	452	411	151	382	98	100	(10)	2	7	21	53	16	2	96	90	68	1.068	
NY102	390	368	135	324	96	98	(10)	2	12	32	52	3	0	98	86	55	1.080	
NY103	422	340	125	319	90	93	(10)	2	6	22	55	14	1	97	91	68	1.070	
Reds:																		
Chieftain (std)	469	432	100	389	98	99	(10)	3	10	17	55	15	0	96	87	69	1.062	
Cherry Red	391	289	67	260	98	100	(10)	3	10	29	56	2	0	97	87	58	1.072	
Norland, Dark Red	459	434	100	394	100	100	(10)	2	9	26	56	6	0	97	88	62	1.067	
NorDonna	368	347	80	304	75	86	(10)	3	12	28	48	9	0	97	85	57	1.064	
Red Ruby	360	299	69	250	98	98	(10)	6	15	31	45	2	0	94	79	47	1.062	
B0811-13	407	374	87	335	98	99	(10)	2	10	23	52	12	0	98	87	65	1.066	
W. D. LSD (k=100)	48	63	61											3	5	8	0.004	

^{1,2,3}See Maine Table 3 for footnote information.

Maine Table 12. Plant size, maturity, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 24 round-whites and red-skinned NE-184 regional trial lines grown at St. Agatha, Maine - 1997.

Variety	Plant Data ¹		Tuber Data ¹		Appear- ance	Tuber Defects (%)				Hollow Heart Rating ²	Chip Color ³		
	Size 8-20	Vine Matur. at 8-20 Vinekill	Skin Tex- ture	Shape		Total	Sun- Mis- Growth						
							burn	shapen	cracks			Scab	Rot
St. Agatha NE-184 Round-whites and Reds - 101 days													
Atlantic (std.)	7	6.8	5	1	7	12.9	6.3	1.1	2.1	3.2	0.2	1	43
Itasca	6	7.0	7	2	7	5.4	3.0	0.5	1.8	0.1	0.0	0	38
Katahdin	7	6.8	8	2	6	27.2	6.2	1.0	0.5	19.0	0.5	0	--
Kennebec	9	8.0	8	4	6	13.9	11.4	0.5	0.5	1.3	0.2	0	35
NorValley	6	6.3	6	2	6	8.3	6.8	0.3	0.3	0.2	0.8	0	57
Quaggey Joe	7	6.3	8	3	6	26.3	11.0	3.1	7.6	4.7	0.0	2	--
Snowden	5	6.5	5	1	6	3.5	1.0	0.1	0.6	1.8	0.0	0	56
Superior	6	5.5	6	2	7	7.8	4.4	1.6	1.1	0.7	0.0	0	--
AF1424-7	4	5.5	7	2	8	8.2	4.2	0.0	0.3	3.7	0.0	0	66
AF1433-4	5	4.8	6	1	6	4.4	0.4	0.3	0.2	3.5	0.0	0	63
AF1437-1	6	5.0	5	1	5	22.5	1.1	0.2	8.5	12.7	0.0	0	--
AF1480-5	8	7.0	6	3	8	8.2	2.1	2.1	0.1	4.0	0.0	5	--
AF1565-12	4	4.0	6	2	7	9.7	7.2	1.1	0.1	0.9	0.3	0	--
AF1615-1	8	7.5	6	3	6	6.8	4.4	1.4	0.2	0.8	0.0	0	--
B0856-4	6	5.3	4	6	5	4.2	1.9	0.2	0.5	1.6	0.0	2	--
NY87	7	5.0	6	1	8	5.9	3.8	0.5	0.7	0.8	0.1	0	--
NY102	8	6.8	7	1	8	3.4	1.0	0.5	0.5	1.4	0.0	3	--
NY103	7	6.5	6	2	7	16.5	4.3	3.4	1.0	7.7	0.0	0	--
Reds:													
Chieftain (std.)	8	6.8	6	2	7pr	4.8	0.8	1.4	2.0	0.4	0.2	2	--
Cherry Red	7	6.8	6	3	7dr	23.8	3.1	1.6	3.6	15.5	0.0	1	--
NorDonna	7	7.0	5	1	8dr	3.3	1.7	1.0	0.0	0.6	0.0	0	--
Norland, Dark Red	7	4.0	6	2	8br	3.1	1.2	0.8	0.8	0.0	0.3	0	--
Red Ruby	5	5.5	5	2	5br	11.7	5.2	3.6	2.4	0.5	0.0	1	--
B0811-13	7	6.0	5yf	1	8dr	5.8	3.1	1.5	0.8	0.4	0.0	1	--

^{1,2,3}See Maine Table 4 for footnote information. Yf=yellow fleshed; br=bright red skin; dr=dark red skin; pr=pale red skin. The chipping date was December 10, 1997. Waller Duncan LSD (K=100) for chip color = 6.

Maine Table 13. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for six russet/processing (long-tuber-type) varieties and NE-184 regional trial lines grown at St. Agatha, Maine - 1997. (NE184 Regional Potato Variety Trials)

Variety	Total Yield cwt/A	US#1 Yield >1½" % of std. 4 oz.	US#1 Yield (cwt/A) ¹ > (spacing) ²	% Stand 7-2 7-11	Size Distribution by Class ³ (%)											Spec. Grav.
					by length											
					1	2	3	4	5	8 oz	12 oz.	>	>3"	>3½"		
St. Agatha NE-184 Russet/processing Test- 101 days																
R. Burbank (std)	388	365	100	287	99	99(16)	22	48	23	6	1	30	7	65	46	1.071
Century Russet	337	299	82	262	99	100(16)	12	54	24	6	3	33	9	80	51	1.065
R. Norkotah	343	325	89	286	99	100(14)	12	42	31	10	4	45	14	83	69	1.072
B1004-8	262	245	67	194	88	98(16)	21	59	19	1	0	20	1	74	52	1.075
B9922-11	345	301	83	286	98	99(16)	5	30	34	16	15	65	31	98	89	1.075
W1099Rus	416	383	105	357	100	100(16)	7	40	37	11	5	53	16	87	74	1.069
Waller Duncan																
LSD (k=100)	76	98		97								9	7	11	13	0.003

¹U.S.#1 yield = yield >1½ " excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes: 1= <4 oz; 2=4 to 8 oz.; 3=8 to 12 oz.; 4=12 to 16 oz.; 5= >16 oz.

Maine Table 14. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for six russet/processing (long-tuber-type) varieties and NE-184 regional trial lines grown at St. Agatha, Maine - 1997. (NE184 Regional Potato Variety Trials)

Variety	Plant Data ¹		Tuber Data ¹		Tuber Defects (%)				Hollow					
	Size 8-20	Vine Matur. at 9-5 Vinekill	Skin Tex- ture	Shape	Appear- ance	Sun-		Mis- shapen	Growth cracks	Scab	Rot Rating ²	Heart Color ³ 45F 50F		
						Total burn	burn							
St. Agatha NE-184	8	8	8.0	6	6	7	6.0	0.8	3.9	1.2	0.0	0	27	30
R. Burbank (std)	8	8	8.3	6	5	6	11.7	5.4	4.9	1.2	0.1	2	20	23
Century R	6	5	6.0	3	6	5	5.5	3.1	2.0	0.4	0.0	0	19	20
R. Norkotah	7	5	5.3	2	7	7	6.2	1.0	4.0	1.1	0.2	0	24	26
B1004-8	7	6	5.8	2	6	8	14.5	4.6	4.8	2.6	2.1	1	29	33
B9922-11	7	5	5.5	3	7	7	8.1	1.9	2.7	1.7	0.0	0	27	30
W1099Rus														

¹See standard NE184 rating system for key to codes.

²Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

³Chip color from 45 and 50F -- Agron M35 (higher values indicate lighter color): >60 acceptable; All varieties had dark vascular ring defects in the chips. The chipping date was January 5, 1998. Waller Duncan LSD (K=100) for chip color = 3 (for both storage temperatures).

Maine Table 15. French fry color and texture of selected potato clones and varieties under simulated processing conditions¹. All varieties were grown at Presque Isle, Maine, during 1996.

Variety	Color Grade ² Rating Index	Grayness ³ Index	Mealiness ⁴ Index	Comments ⁵	Overall Rating ⁶
Russet Burbank (std)	00-0	1.50	4.0	U	-
Century Russet	00-1	2.50	4.0	Ir	-
Krantz	00	1.05	4.0	U,Sh	-
Russet Norkotah	00-1	1.92	4.0	Be, Ir, Sh	-
AF1426-1	00	1.00	4.0	Bc, Sh	-
AF1481-4	00-0	1.75	4.0	Ir, Sh	-
B0493-8	0-1	2.42	4.0	Be, Ir	-
B922-11	00-0	1.25	4.0	Ir, Sh	-
W1099Rus	00	1.00	4.0	U, Sh	-
Waller Duncan	LSD (k=100)	0.80	NS		

¹Two center raw tuber slices were cut from each of ten tubers. The slices were rinsed in cool water, blanched for 8 minutes at 170°F, par-fried at 375°F for 80 seconds, and quick frozen at -30°C in plastic bags. Four such replications were processed on March 3, 1997 and held at -15°F until evaluation. Prior to evaluation, samples were finish-fried at 360°F for 2-1/2 minutes on March 12, 1997, blotted dry with a paper towel, and cooled for 6 minutes. Processing and evaluations were done by T. Work of the Department of Food Science, University of Maine, Orono, ME. All tuber samples were stored at 50°F, 85% R.H. from harvest until processing.

²Color Grades are from USDA color standards chart #64-1, third edition.

³Grayness indices represent weighted means derived from the following evaluation scale: 4 = no graying; 3 = slight graying; 2 = moderate graying; 1 = intense graying.

⁴Mealiness indices represent weighted means derived from the following evaluation scale: 5 = dry, mealy; 4 = mod. mealy, sl. moist; 3 = sl. mealy, mod. moist; 2 = soggy, not mealy; 1 = very soggy, not mealy.

⁵Comments: U = uniform fried color; Ir = french fries were irregular in color; dark blotches detracted from appearance of product; Be = Dark blotches on ends of many fries; Bc = Dark blotches in centers of many fries; Bl = general blotchy appearance of fries; Sh = Short fries from small and/or round tubers.

⁶Overall rating: quality rated better (+), not different (o), or poorer (-) than Russet Burbank.

Maine Table 16. Chip color from 38°F, 45°F, and 50°F storage, reconditioning potential, washed appearance ratings, days to sprout formation, and storage weight losses at 38°F and 50°F for 43 potato varieties grown at Presque Isle, Maine, during 1996 and stored during the 1996-1997 storage season.

Variety	Chip Color from Storage		After-Cooking Darkening ³	Washed Appearance Index ⁴	Days to Indic. Storage Wt.			
	50°F ¹	45°F ¹			38°F ¹	Sprout Length ⁵	Loss % ⁶	
					PIP	1/2"	38°F	50°F
Early Trial:								
Superior	45	24	17	36	7.7	14 (1) PC, M, GC, RS	157	3.5 9.2
Monona	60	39	27	52	8.2	63 (3) PC, SS, GC, B	85 194	3.4 11.7
AF1331-2	27	--	--	--	8.5	31 (3) PC, M, SB, GC, RS, BS	85 178	3.9 9.6
AF1424-6	64	44	36	54	8.4	82 (5) PC, SZ	92 148	3.0 9.6
AF1424-7	64	51	35	60	8.0syl	43 (3) M, GC, SS, SZ	85 157	4.9 13.1
AF1565-12	32	18	13	25	7.4	63 (6) SS, SB, SZ	85 113	4.5 18.9
Waller Duncan	5	6	3	6				
Medium Chipping Trial:								
Kennebec	53	44	26	46	8.5	67 (6) PC, SB, BS, B	93 198	3.8 8.2
Atlantic	54	49	25	56	8.4sl, pc	84 (5) PC, BS	86 149	2.8 19.2
MaineChip	62	63	43	64	8.2sl, syl	70 (5) SB, B, SZ	72 142	3.8 27.3s
NorValley	64	58	35	55	7.9	73 (3) PC, M, SB, SZ	72 107	2.8 19.5s
Snowden	60	58	30	60	8.0sl, syl	76 (5) PC, SB, BS	72 163	2.7 16.2
AF1433-4	66	57	32	65	8.8	79 (3) PC, RS, SS, SZ	72 114	2.5 19.0
B0564-8	59	50	30	48	8.2	86 (5) PC, SS, SZ	72 142	2.9 21.5
B0564-9	52	45	28	50	8.0syl	79 (6) PC, SB, RS, SZ	72 121	3.6 18.4
B0585-5	58	49	30	46	8.6	60 (4) PC, SB, SS, BS, B	93 156	4.0 15.8
ND2471-8	59	50	26	54	7.7sl, pc	46 (4) PC, SB, GC, SS, BS, B, SZ	72 170	3.9 8.7
NY87	60	48	29	59	8.0	83 (6) SB, SS, SZ	79 156	2.9 20.9
NY102	64	63	39	64	7.9syl	81 (6) PC, SB, SS, SZ	72 205	4.2 10.7
NY103	60	58	37	60	7.8	74 (7) SB, B	72 198	2.7 5.6
W870	64	60	38	60	7.8	73 (6) SB, B, PR	93 163	4.4 9.5
Waller Duncan	4	4	4	4				

Maine Table 16 cont.

Variety	Chip Color from Storage		After-Cooking Darkening ³	Washed Appearance Index ⁴	Days to Indic. Storage Wt.		
	50°F ¹	45°F ¹			Sprout Length ⁵	Loss %	
					PIP	38°F	50°F
<u>Medium Table Trial:</u>							
Kennebec	53	38	26	42	8.5	50 (3) PC, M, SB, GC, BS	93 177 4.2 11.9
Atlantic	56	42	26	54	8.6sl	62 (5) SB, BS, SZ	93 128 3.1 13.3
Cherry Red	37	--	--	--	7.7pc	85 (8) SB, SS, SZ	72 135 3.0 23.3s
Chieftain	31	--	--	--	8.1	79 (5) PC, BS	72 163 3.3 10.0
Dark Red Norland	40	--	--	--	7.8	71 (5) SS, B, SZ, PR	86 128 3.7 24.5s
NorDonna	32	--	--	--	8.5	64 (3) PC, RS, SZ	72 121 2.6 8.4
Quaggy Joe	24	--	--	--	8.4syl	44 (7) PC, BS, B	72 142 4.5 17.4
Red Ruby	29	--	--	--	8.2	68 (7) B, SZ	93 163 3.6 14.1
AF1425-1	52	33	19	34	7.9	68 (5) SB, SS, SZ	86 163 2.6 11.0
AF1475-16	39	26	17	38	7.4pc	89 (6) SB, SS, PR	72 100 3.9 18.9s
Waller Duncan LSD	3	4	4	4			
<u>Late Trial:</u>							
Katahdin	45	26	21	51	8.4	91 (7) PC, RS, B, FL	63 161 4.0 5.0
Niska	62	46	27	63	8.4	71 (7) SB, B	63 140 3.8 14.8
St. Johns	35	--	--	--	8.0	77 (6) PC, SS, BS	84 154 5.4 14.5r
Yukon Gold	35	--	19	43	8.4yl	83 (7) PC, SS, B	84 175 2.2 7.6
AF1455-9	44	28	17	45	7.8pc	84 (5) PC, SB, SS, PU	63 119 4.6 20.8s
AF1480-5	54	40	26	49	8.2	78 (5) PC, B, SZ, FL	63 133 5.7 21.0s
Waller Duncan LSD	4	4	3	7			
<u>Russet/Processing Trial:</u>							
Russet Burbank	45	33	20	45	7.9	72 (7) SB, B	84 203 2.2 6.5
Century Russet	27	19	16	24	7.8	98 (6) SZ	70 189 3.8 14.6
Krantz	57	42	21	48	7.8pc	76 (6) GC, SZ	63 98 1.3 17.5
R. Norkotah	41	32	18	38	7.8	77 (4) SB, SS, SZ	77 182 3.4 6.3
AF1426-1	56	40	27	44	8.8	63 (4) SB, GC, SS, BS	84 203 2.6r 2.5

Maine Table 16 cont.

Russet/Processing Trial (continued):

AF1481-4	44	26	17	38	8.4	77 (3) ^{cc, sz}	77	133	3.6	20.3
B0493-8	37	19	14	27	8.0 ^{syl}	94 (8) ^B	77	126	2.6	16.8
B9922-11	49	33	19	44	7.9	90 (7) ^{cc}	63	175	0.6	13.8
W1099Rus	56	36	32	59	7.5	83 (5) ^{sz}	63	168	3.3	18.0
Waller Duncan LSD	4	5	3	4						

¹Stored at 38°F, 45°F, or 50°F, 85% R.H. from harvest until February 10 to March 5, 1997 Chip color scores are from an Agtron Model M-35 Process Analyzer (Agtron, Inc., Sparks, Nevada; calibrated with black disk "0" = 0 and white disk "90" = 90). Chips were crushed and reported values are means from four replicate samples. Each sample was read three times and was thoroughly mixed between readings. Higher numbers indicate lighter chip colors.

²Reconditioned samples were taken from 38°F and placed at 70°F for a 3-week period starting on January 22, 1997. See Agtron description under footnote #1.

³Samples were stored at 45°F and 85% R.H. from harvest until March 21, 1997. They were then warmed to 65°F for five days. Tubers were diced and then blanched for 5 min, cooled to 120°F, and then rated after 30 min. with a Munsel Neutral Color Scale. Higher indices indicate lighter color. Key to codes: sl=sloughing was a defect in this sample; syl=slightly yellow; yl=yellow; pc=unusually poor overall color.

⁴Unreplicated samples weighing approximately 7500 grams were stored at 45°F and 85% R.H. until January 7, 1996. Tubers were then washed and graded. First number indicates % U.S.#1 grade tubers in sample. Numbers in parentheses indicate subjective appearance of the sample using standard NE107 codes. Codes indicate major external defects as follows: M=misshapen, NR=nonuniform russetting, PC=poor color, SB=sunburn, GC=growth cracks, CS=common scab, SS=silver scurf, RS=russet scab, DR=dry rot, SR=soft rot, BS=black scurf, LE=enlarged lenticles, B=bruises, BD=blackdot, PW=powdery scab, RA=red areas, PU=purple areas on seed end, SZ=small tuber size, FL=flat tubers, PR=pear shaped.

⁵Tubers were stored at 45°F, 85% R.H.

⁶Percentage sprout and weight loss following storage from harvest until March 31 to April 3, 1997, at indicated temperature and 85% R.H. Codes "s" or "r" indicate heavily sprouted or samples with more than two spoiled tubers, respectively.

MAINE

Alvin F. Reeves, Garland S. Grounds, and Nena Huston.

University of Maine Potato Breeding Project

Objectives: The development of new potato varieties of three types: 1. high-yielding, round, white, fresh market varieties with good table qualities and resistance to scab; 2. round white chipping varieties with high dry matter and low sugars, especially after long term cold storage; and 3. russet varieties with high yield and high dry matter suitable for french fry processing and fresh market.

Seed and seedling production.

A total of 57 parent plants were intercrossed in 140 different combinations (54 russet, 47 segregating for resistance to late blight, 51 with tablestock potential, and 14 with chipping potential) to produce 112,150 seeds. An additional 2,010,975 seeds were obtained from 69 field plantings. Greenhouse plantings of 60,500 true seeds yielded 23,031 seedlings from which 15,542 first tubers were harvested. Second tubers were harvested from 4,143 seedlings and planted in disease screening plots. Round tubers harvested in russet combinations were discarded; misshapen tubers were discarded from all combinations.

Seedling selection. A total of 613 (2.2%) new selections were saved from 27,791 single hills. From the 252 12-hill plots, 68 (27%) were saved for further testing. Forty-two of 49 60-hill plots were selected, and 156 advanced selections were maintained and tested.

Disease tests. In cooperation with Drs. David Lambert, Gary Sewell, Bill Brodie, Robert Goth, Pete

Weingartner, and Modesto Olanya, a number of selections were tested for disease resistances. All tests were inoculated either directly or on spreader rows within the plots. Results were as follows: 3 of 8 were resistant to corky ring spot; 13/68 to acid scab; 38/105 to common scab; 27/71 to verticillium; 28/58 to golden nematode; 28/144 to late blight; 14/45 to leafroll; and 100/105 to net necrosis.

Physiological disorders. Additional tests for physiological disorders showed 11 of 52 resistant to hollow heart; 20/47 to blackspot bruising; and 15/31 to shatter bruising.

Chip tests. After processing in December and February, from five storage temperatures, fifteen entries had better average chip color than Monona (5.9): AF 1668-60 (4.1), AF 1424-7 (4.45), CS 7232-4 (4.5), Snowden (4.75), MaineChip (4.85), AF 1668-62 (4.9), AF 1433-4 (4.95), Somerset (5.0), ATX 85404-8 (5.05), NY 102 (5.1), ND 860-2 (5.35), NY 87 (5.4), NorValley (5.7), TX 1385-12Ru (5.7), and AF 1898-1 (5.8).

Commercial Trials. Along with MaineChip, Mainestay, Quaggy Joe and St.Johns, two numbered selections were grown on commercial farms in 1997: AF 1438-6 and AF 1481-4. They will be dropped because of growth cracks and low yields respectively.

Advanced Selections

Chipping selections:

MaineChip (AF 875-16; AF 186-2 x AF 84-4) was named in 1991. It is a high dry matter, cold-chipping variety, with yields of marketable size, specific gravity and chip color equal to Snowden. Commercial seed is not being produced even though one or two chip growers have had success with this variety.

AF 875-15, a sibling of MaineChip, has better yields than MaineChip and equal dry matter, but is not as good after cold storage. It is a good chipper from the field and does not show the heat necrosis that Atlantic does. Hollow heart is very rare, but growth cracks have been a problem in commercial fields.

AF 1668-60 (CS 7232-4 open pollinated) has excellent chip color from cold storage, with adequate gravity and yield. It is resistant to net necrosis and early maturing with moderate resistance to verticillium.

AF 1856-1 (CF 80247-1 x EB 8109-1) also has excellent chip color from storage and adequate gravity and yield. It is resistant to net necrosis, scab, and verticillium.

Round white table varieties:

Mainestay (AF 1060-2; AF 431-9 open pollinated) is slightly higher yielding than St.Johns, but is more susceptible to scab. It developed purple streaks in 1996, but this was not a problem in 1997. It is difficult to kill, and if dug green can give problems in storage. High yields and good size are its best qualities.

Quaggy Joe (AF 1470-17; CS 7589-8 x Portage) is a very high-yielding variety with good appearance and table quality. Problems seen so far have been hollow heart, purple streaks (not as many as in Mainestay), and pressure bruising. These problems were not prevalent in 1996 and 1997 commercial plantings.

St.Johns (AF 828-5; BR 6317-21 x CC 14-3a) is a late maturing variety with high yields and good disease reactions. It is resistant to golden nematode and the corky ring spot virus,

and does well all along the east coast. Two commercial growers have had trouble storing it, but yields and quality were good. It has a good washed appearance.

AF 1437-1 (AF 686-3 x B 7168-10) is a pretty round white with very high yields at early or mid-season harvest. Growth cracks may be a problem.

AF 1470-6 (CS 7589-8 x Portage) is very high-yielding at early harvest. It is resistant to net necrosis and verticillium. Low specific gravity and growth cracks may be problems.

AF 1565-12 (AF 303-5 x Sunrise) is a round white table variety with good size, appearance and yields. It is early maturing and resistant to golden nematode, verticillium and scab. Specific gravity is low and cooked texture is rated low, but overall ratings equal Superior.

AF 1569-2 (Portage x Sunrise) has high yields at early harvest in several locations. It is resistant to net necrosis, but susceptible to scab and growth cracks.

AF 1615-1 (SA 8211-6 x Sunrise) is a high-yielding medium-late maturing selection with resistance to net necrosis, golden nematode, verticillium, and scab. It has high specific gravity but does not give good chip color after storage.

Russets and Long Whites:

AF 1156-14 (Goldrus x Penobscot) has high yields and specific gravity with excellent french fry qualities. It is resistant to net necrosis, leafroll, and verticillium.

AF 1753-16 (CS 7981-7 x CF 7608-19) is a long russet with good shape, high yields, and fair processing quality.

Maine Breeding Table 1. Performance of some round white varieties grown at Presque Isle, Maine, 1997

Pedigree	Color <u>1/</u>	Shape <u>2/</u>	Maturity <u>3/</u>	Yield, Cwt/A US#1 <u>4/</u>	Yield, Cwt/A Total	%US#1 <u>4/</u>	Days <u>5/</u>	Specific Gravity	Appearance <u>6/</u>
AF 1437-1	WN	R	E	452	457	98.9	91	1.063	3+
AF 1470-6	W(N)	R	E	447	453	98.7	91	1.059	3
AF 1565-12	W	R(O)	E	463	472	98.1	91	1.073	4+
AF 1569-2	CN	R	E	418	430	97.2	94	1.074	4
AF 1615-1	W	R(O)	M	548	557	98.4	110	1.086	4-
Katahdin	W	R	M	428	434	98.6	110	1.078	3+
Kennebec	W	R0, fl	ME	358	370	96.8	91	1.072	4-
Kennebec	W	R0	ME	312	321	97.2	94	1.074	3
Superior	WCN	R	E	332	342	97.1	91	1.081	4
Superior	C	R	E	282	291	96.9	94	1.080	3

1/ W = White, N = Netted, C = Cream, R = Russet, () = light, - = heavy.

2/ R = Round, O = Oblong, L = Large, fl = flat.

3/ E = Early, M = Medium, L = Late.

4/ US#1 = > 1-7/8 inches diameter.

5/ Number of days from planting to first killing spray.

6/ Scale 1 = poor to 5 = excellent.

Pedigree	Color <u>1/</u>	Shape <u>2/</u>	Maturity <u>3/</u>	Yield, Cwt/A US#1 <u>4/</u>	Yield, Cwt/A Total	%US#1 <u>4/</u>	Days <u>5/</u>	Specific Gravity	Appearance <u>6/</u>	Chip Color <u>7/</u>		
										41°	45°	50°
AF 1668-60	CN	R	E	337	342	98.5	94	1.087	4	5.0	4.1	3.7
AF 1856-1	W	R0	E	395	397	99.5	100	1.075	4	8.1	5.7	6.7
Kennebec	W	R0	ME	312	321	97.2	94	1.074	3	8.8	6.8	7.6
Kennebec	W(N)	R(0)	ME	372	380	97.9	100	1.074	3-			
MaineChip	W(N)	R	ME		331		96	1.089	4	6.5	4.5	4.8
Superior	C	R	E	282	291	96.9	94	1.080	3			
										French fry processing results <u>9/</u>		
						% > 3-1/2" <u>8/</u>		Color		Texture		
										Flavor		
AF 1156-4	R	O(L)	M	447	455	86.0	110	1.087	4-	6.0	6.5	6.0
AF 1753-16	R	OL	ML	599	608	93.0	110	1.087	4+	5.3	6.0	6.3
Russet Burbank	R	L	ML	518	546	68.0	110	1.085	3-	6.8	6.3	6.5
Shepody	WN	L	ME	432	448	76.0	110	1.078	3	6.0	6.0	6.5

1/-6/ See Maine Breeding Table 1.

7/ From Potato Chip Institute International chart where 1 = very light and 10 = very dark; less than 5 is acceptable. Data are averages of December and February cooking dates, four replications, five tubers each.

8/ Percent over 3½ inches in length.

9/ Scale 1-9, where 1-4 = poor, not acceptable; 5 = fair, acceptable; and 6-9 = good.

Michigan Potato Variety Evaluations

D.S. Douches, R.W. Chase, K. Jastrzebski, R. Hammerschmidt, W. Kirk, C. Long, K. Walters and J. Coombs

The objectives of the evaluations are to identify superior varieties for fresh market or for processing and to develop recommendations for the growing of those varieties. The varieties were compared in groups according to the tuber type and skin color and to the advancement in selection. Each season, total and marketable yields, specific gravity, tuber appearance, incidence of external and internal defects, chip color (from field, 42 and 50 F storage), dormancy (at 50F), as well as susceptibilities to late blight, common scab, Fusarium dry rot, Erwinia soft rot, and blackspot bruising are determined.

Six field experiments were conducted at the Montcalm Research Farm in Enniscorthy, MI. They were planted in randomized complete block design with four replications. The plots were 23 feet long and spacing between plants was 12 inches. Inter-row spacing was 34 inches. Supplemental irrigation was applied as needed.

Both round and long variety groups were harvested at two dates. They are referred to as the Date-of-Harvest trials. The other two field experiments were the North Central Regional and European trials. In each of these trials the yield was graded into four size classes, incidence of external and internal defects in > 3.25 in. diameter or 10 oz. potatoes were recorded, and samples for specific gravity, chipping, dormancy, disease tests, bruising, and cooking tests were taken. Chip quality was assessed on 25-tuber samples, taking two slices from each tuber. Chips were fried at 365°F. The color was measured visually with the SFA 1-5 color chart. Tuber samples were also stored at 42 or 50°F for chip-processing out of storage in January and March.

Round White Varieties

Six varieties and 19 breeding lines were compared at two harvest dates. Atlantic, Snowden, Pike, and Onaway were used as checks. Entries were subject to early dying. As a result, the plot yields were below average. The results are presented in Tables 1 and 2. In the early harvest trial (95 days), NY101, Onaway, MSE228-9, MSE228-11, NY103, Atlantic, and Atlantic NewLeaf had the highest yields of the 25 entries. At the later harvest (127 days), NY101 and

MSE228-11 were still the top yielders. The MSU advanced seedlings MSE018-1 and MSB107-1 were also high yielding. These two lines were also the top yielding MSU selections in the on-farm trials in 1997. Internal brown spot and hollow heart incidence were low within the trial, however vascular discoloration was more prevalent than in previous years.

Variety characteristics:

Atlantic NewLeaf - a selection from NatureMark which expresses the CryIII-Bt gene for beetle control. It performs similar to Atlantic.

NY103 - a chip-processing/fresh market selection from New York which has high yield potential, excellent internal quality, and smooth, bright appearance, but the specific gravity is too low for chip-processing. NY103 is equivalent to Atlantic for scab reaction. This selection has had excellent yield potential in on-farm trials. It is expected to be named by New York.

NY101 - a light-yellow-fleshed selection from New York. This line has an excellent shape, with netted tubers and very high yield potential. It is resistant to scab. In general, internal defects are low, but in 1995 we observed IBS in the oversize tubers.

Pike - an average yielding selection from New York. It chip-processes well and is resistant to scab similar to Superior. At times it has shown IBS in the tubers.

MSA091-1 - an MSU selection for chip-processing with scab resistance. Yields have been variable, but it has performed well in other states, and the late blight trials indicate a reduced susceptibility to late blight.

MSB076-2 - this MSU selection has high yield potential, has very high specific gravity, acceptable chip quality, and is resistant to scab. It is between Atlantic and Snowden in maturity, and we observed, in some instances, a tendency for hollow heart in oversize tubers. It has a large and upright vine type. This selection had the highest overall merit rating in the 1996 and 1997 North Central Regional Trials.

MSB107-1 - an MSU selection for the tablestock market. It is bright-skinned with large, round tubers with excellent internal quality. This selection performed well in grower trials in 1996 and 1997.

MSC103-2 - an MSU selection for the tablestock market. It performed well in the 1996 and 1997 on-farm trials. Its maturity is late, scab tolerance is intermediate, and it has reduced susceptibility to late blight.

MSE018-1 - an MSU chip-processing selection with high yield potential. It was an outstanding yielder in the 1997 on-farm trials. Specific gravity is high and it has a good general

Douches is an associate professor, Chase is a professor emeritus, Jastrzebski is a visiting scholar, Long is a research technician, and Walters and Coombs are graduate assistants in the Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824. Hammerschmidt is a professor in the Department of Botany and Plant Pathology, Michigan State University, East Lansing, MI 48824.

appearance. Scab tolerance is intermediate and it has a reduced susceptibility to late blight. This line is targeted for the 1998 SFA Trials.

MSE221-1 - an MSU tablestock selection. It has high yield potential, but it did not perform well in the 1997 MRF trials due to early dying. General appearance is good and has strong resistance to scab.

MSE228-9 - an MSU selection for the tablestock/chip-processing market. Yield potential is above average, maturity is mid-season, and scab tolerance is good. It was in the 1997 on-farm trials.

MSE228-11 - an MSU selection for the tablestock/chip-processing market. It has high yield potential, mid-season maturity, and good scab tolerance. It was in the 1997 on-farm trials.

MSNT-1 - an MSU chip-processing selection. It has above average yield potential, excellent chip quality, and strong resistance to scab. It is targeted for the 1998 SFA trials.

Long Varieties

Five varieties and seven breeding lines were tested. Russet Burbank and Shepody were grown as check varieties. The first date-of-harvest trial was dug 120 days from planting rather than 95 days to give the trial greater time for tuber bulking. Most of the entries in the long-type trial were late maturing resulting in low yields and small tuber size at the first date-of-harvest (Table 3). At the second harvest on September 18 (136 days), yields for all entries had not changed due to potato early dying (Table 4). Yields were below average. Among the 12 long-type entries, Umatilla Russet (AO82611-7), Century Russet, and Shepody produced the highest yields at both harvest dates. Internal defects were not significant.

Variety characteristics:

Century Russet - a russet variety from Oregon/USDA-Aberdeen with high yield potential. It has excellent internal quality and bulks early despite a late vine maturity. It is susceptible to scab.

JS111-28 - provided by J.R. Simplot. JS111-28 has high yield potential with good general appearance, good russetting, and shallow eyes. It is a somaclonal derivative of Lemhi Russet selected for lower incidence of blackspot bruise. It is also highly scab resistant.

A7961-1 - is an USDA-Aberdeen entry with above average yield. It has uniform appearance, heavier russetting than Russet Burbank, and minimal internal defects. It can be used for frozen-processing.

Umatilla Russet (AO82611-7) - this selection was the top

performing line in 1997, but was below average in 1996. It is reported to have some resistance to early dying. Tuber shape is long but tuber width is narrow.

Newleaf Russet Burbank - a variety from NatureMark which expresses the Bt gene for beetle control. Yield was below average this year despite good vine growth.

MSE202-3Rus - an MSU selection with strong scab resistance. It has good appearance and may be suitable for tablestock or processing. Yield was low in 1997.

North Central Regional Trial

The North Central Trial is conducted in a wide range of environments, in 9 states to provide adaptability data for the release of new varieties from North Dakota, Minnesota, Wisconsin, and Michigan. Twelve breeding lines and seven varieties were tested in Michigan. The results are presented in Table 5. The range of yields was wide. The MSU selections, *MSB076-2* and *MSB106-7*, performed well in 1996 and 1997. *W1313*, a Wisconsin seedling, had the highest yield but had over 50% of its oversize tubers with hollow heart and was the most bruise susceptible line in all the trials. The Minnesota selection, *MN16489*, had a high overall merit in the trial, but it has a blush skin which may limit its marketability. The North Dakota seedling, *ND2676-10*, has a nice appearance, some scab resistance, and a good chip score, but it had a below average yield and a specific gravity under the industry standards.

European/Yellow Trial

Five European varieties and advanced selections were tested along with three yellow-fleshed MSU seedlings. Snowden, Yukon Gold, Michigold, and Saginaw Gold were used as checks. The results are summarized in Table 6. Typically, most of the European selections and varieties are late to very-late in maturity, but in 1997, the vines died early and yields were down considerably. The best performing lines in 1997 were *MSE222-5Y*, *MSE048-2Y*, *MSE149-5Y*, and *MSE226-4Y*. *MSE149-5Y* is a light yellow-fleshed selection which will be advanced to the date-of-harvest round white trial in 1998 because of its processing potential. Pickouts were high in *Latona*, *Obelix*, *Dali*, *MSA097-1Y*, and *MSA222-5Y*.

Potato Scab Evaluation

Each year a replicated field trial at the MSU Soils Farm is conducted to assess resistance to common and pitted scab. The varieties are ranked on a 1-5 scale based upon a combined score for scab coverage and lesion severity. Usually examining one year's data does not indicate which varieties are resistant but it should begin to identify ones that can be classified as susceptible to scab. Our goal is to evaluate important advanced selections and varieties in the study at least three years to obtain a valid estimate of the

level of resistance in each line. We now have had four years of good scab trials (i.e. high levels of infection in susceptible lines).

Table 7A categorizes many of the varieties and advanced selections tested. Scab results are also found in the Trial Summaries (Tables 2, 4, 5, and 6). Table 7B summarizes the 1994-6 scab trial results for the lines in these trials. Many russet lines showed resistance to scab infection with Century Russet an exception to this trend. The MSU lines MSE192-8Rus and MSE202-3Rus, showed some resistance to scab in 1996 and 1997. Some round white tablestock clones have resistance such as Superior, Onaway, MSB040-3, MSE228-9, MSE228-11, and MSE221-1. Yellow-fleshed selections with resistance are NY101, MSE226-4Y, MSE226-5Y, MSC120-1Y, and MSA097-1Y. Scab resistance was also identified in the chip-processing clones Pike and MSU selections MSB076-2, MSA091-1, MSB073-2, MSNT-1, MSE230-6, MSF014-9, MSF313-3, and MSG227-2.

Blackspot Susceptibility

Increased evaluations of advanced seedlings and new varieties for their susceptibility to blackspot bruising has been implemented in the variety evaluation program. Check samples of 25 tubers were collected (a composite of 4 reps) from each cultivar at the time of grading. A second 25 tuber sample was similarly collected and was placed in a hexagon plywood drum and tumbled 10 times to provide a simulated bruise. Both samples were peeled in an abrasive peeler in October and individual tubers were assessed for the number of blackspot bruises on each potato. These data are shown in Tables 8A and 8B.

Table 8A summarizes the data for the samples receiving the simulated bruise and Table 8B, the check samples. The bruise data are represented in two ways: percentage of bruise free potatoes and average number of bruises per tuber. A high percentage of bruise-free potatoes is the desired goal; however, the numbers of blackspot bruises per potato is also important. Cultivars which show blackspot incidence of 3 or more spots per tuber from the simulated bruise are approaching the bruise-susceptible rating. In addition, the data is grouped by trial, since the bruise levels can vary between trials. These results become more meaningful when evaluated over 3 years which reflects different growing seasons and harvest conditions. Bruising was more severe in 1996 than in 1997 and 1995.

Late Blight Trial

In 1997 a late blight trial was conducted at the Muck Soils Research Farm. Over 175 entries were evaluated in replicated plots. The field was inoculated on July 22 and ratings were taken during July and August. Most lines were highly susceptible to the US-8 genotype of late blight. Lines with the least infection were AWN86514-1, B0767-2, B0718-3, and MSG274-3. The good agronomic qualities of

MSG274-3 makes this selection a strong candidate for commercial testing when enough seed is produced. Foliar susceptibility of all the lines tested against the US-8 genotype of late blight is summarized in Table 9.

Post-harvest Disease Evaluation: Fusarium Dry Rot

As part of the postharvest evaluation, resistance to *Fusarium sambucinum* (fusarium dry rot) was assessed by inoculating 8 whole tubers post-harvest from each line in the variety trials. The tubers were held at 20°C for approximately three weeks and then scored for dry rot infection depth and width. These data are summarized in Table 10. The clones in this table are grouped according to infection levels (low: < 8mm infection depth, moderate: 8-16mm infection depth, high: > 16mm infection depth). Few clones have low levels of infection. The best lines in this experiment were Snowden, B1004-8, MSG236-1, MSE030-4, and MSF105-10. The results of this experiment continue to support the low dry rot infection levels observed in Snowden and that the low infection level can be transmitted to progeny such as MSG236-1, MSE030-4, and MSF105-10.

Michigan Table 1. ROUND WHITES: EARLY HARVEST MONTCALM RESEARCH FARM "AUGUST 8, 1997" (95 DAYS)

LINE	CWT/A		PERCENT OF TOTAL ¹						TUBER QUALITY ²					3-YR AVG	
	US#1 TOTAL		US#1	Bs	As	OV	PO	SP GR	SFA†	HH	VD	IBS	BC	TOTAL CUT	US#1 CWT/A
	US#1	TOTAL													
NY101	186	235	79	20	77	2	1	1.084	1.5	0	0	0	0	24	288
ATLANTIC	160	199	80	17	73	7	3	1.094	1.5	1	2	0	0	24	263
ONAWAY	149	206	73	26	69	4	1	1.069	4.0	0	3	0	0	24	259
MSE228-9	149	189	79	20	77	2	1	1.089	1.0	0	0	0	0	24	-
ATL NEWLEAF	139	173	80	20	79	1	0	1.094	1.0	0	3	0	2	24	-
NY103	139	192	73	26	73	0	2	1.076	2.5	0	0	0	0	24	254
MSE228-11	139	239	58	41	58	0	0	1.088	2.0	0	4	0	0	24	-
MSE221-1	132	182	73	25	71	2	2	1.071	2.5	0	4	0	0	24	-
FL1833	132	167	79	20	76	3	1	1.088	1.5	1	14	0	0	24	236
FL1879	121	161	75	24	71	4	1	1.084	2.0	0	8	0	0	24	-
MSNT-1	117	187	62	38	62	0	0	1.090	1.0	0	0	0	0	24	-
SNOWDEN	95	192	50	50	48	1	0	1.089	1.0	0	6	0	0	24	167
MSC103-2	93	112	83	16	80	3	1	1.071	3.0	0	4	0	0	24	-
PIKE	88	134	66	34	66	0	0	1.084	1.0	0	0	0	0	24	167
FL1831	83	136	61	33	60	1	6	1.095	1.0	1	0	0	0	24	-
REBA (NY87)	83	137	60	39	60	0	0	1.074	2.0	0	1	0	0	24	-
MSE018-1	82	147	56	44	56	0	0	1.093	2.0	0	2	0	0	24	-
MSB057-2	79	141	56	44	56	0	0	1.084	1.5	0	4	0	0	24	-
MSC148-A	75	160	47	52	47	0	1	1.081	2.0	0	5	2	0	24	-
FL1869	73	149	49	50	49	0	1	1.087	1.0	0	2	0	0	24	-
MSA091-1	71	152	47	51	47	0	2	1.084	1.0	0	3	0	0	24	136*
MSB107-1	67	107	63	37	62	1	1	1.074	2.5	0	1	0	0	24	153
MSB040-3	64	134	48	50	48	0	2	1.075	2.5	0	1	0	0	24	-
MSB076-2	56	148	38	62	36	2	0	1.086	2.0	1	1	0	0	24	193
MSB073-2	31	135	23	76	23	0	1	1.092	2.0	0	2	0	0	24	-
MEAN	104	165						1.084							
LSD(0.05)	29	31													

¹SIZE

B: < 2"

A: 2 - 3.25"

OV: > 3.25"

PO: PICKOUTS

²QUALITY

HH: HOLLOW HEART

BC: BROWN CENTER

VD: VASCULAR DISCOLORATION

IBS: INTERNAL BROWN SPOT

†SNACK FOOD ASSOCIATION CHIP SCORE

OUT OF THE FIELD

RATINGS: 1 - 5

1: EXCELLENT

5: POOR

* TWO-YEAR AVERAGE

PLANTED MAY 5, 1997

Michigan Table 2. ROUND WHITES: LATE HARVEST MONTCALM RESEARCH FARM SEPTEMBER 9, 1997
(127 DAYS)

LINE	CWT/A		PERCENT OF TOTAL ¹						TUBER QUALITY ²					TOTAL		3-YR AVG
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SFA†	HH	VD	IBS	BC	CUT	SCAB ³	US#1 CWT/A
NY101	276	312	89	11	86	2	0	1.077	1.5	0	8	0	0	40	1.0	448
MSE228-11	252	337	75	24	73	1	1	1.086	2.0	0	13	0	0	40	1.5	278*
MSE018-1	248	295	84	15	76	8	1	1.110	1.5	2	4	0	0	40	2.6	407*
MSB107-1	224	254	88	11	80	9	0	1.080	1.0	1	2	0	0	40	1.8	332
FL1833	217	241	90	9	75	15	1	1.083	1.5	1	13	1	0	40	1.7	369
ATLANTIC	211	252	84	14	74	10	3	1.089	1.5	3	5	0	1	40	3.3	352
ATL NEWLEAF	199	232	86	14	79	7	0	1.088	1.5	3	10	3	2	40	-	-
MSE228-9	197	231	86	14	82	3	1	1.082	1.5	0	3	0	0	40	1.8	233*
ONAWAY	192	238	80	19	75	6	1	1.062	3.5	0	10	0	1	40	1.0	315
REBA (NY87)	183	219	83	17	74	9	0	1.076	1.0	0	1	1	0	40	2.3	-
MSA091-1	178	231	77	21	75	2	2	1.083	1.5	0	8	0	0	40	1.8	247*
MSNT-1	171	236	73	27	73	0	1	1.085	1.0	1	0	1	0	40	1.0	252*
MSE221-1	165	202	82	13	74	8	5	1.066	3.0	0	5	2	0	40	1.0	284*
MSC103-2	164	180	91	7	78	13	2	1.076	3.0	0	5	0	0	40	1.8	264*
NY103	162	197	82	18	82	0	0	1.069	1.5	0	2	1	0	40	2.5	356
FL1879	157	187	84	16	78	5	0	1.078	1.5	4	7	1	0	40	3.0	-
SNOWDEN	141	221	64	36	63	1	0	1.083	1.0	0	15	0	0	40	2.5	296
MSB057-2	139	195	71	29	69	2	0	1.081	2.0	0	10	0	0	40	4.1	246*
MSB073-2	132	217	61	39	61	0	0	1.084	1.0	0	7	0	0	40	1.8	241*
FL1831	131	183	72	23	72	0	5	1.091	1.0	0	9	2	0	40	1.5	-
PIKE	125	171	73	27	73	0	0	1.081	1.0	0	1	0	0	40	1.7	214*
MSB076-2	113	193	59	41	59	0	0	1.085	1.5	0	2	1	1	40	1.8	301
MSB040-3	88	151	58	41	58	0	0	1.058	1.5	0	2	0	0	20	1.8	188*
FL1869	87	149	58	40	58	0	2	1.078	1.0	1	0	0	0	40	1.3	-
MSC148-A	67	166	40	58	39	1	1	1.075	1.0	1	0	1	0	10	2.4	146*
MEAN	169	220						1.080								
LSD(0.05)	38	36						0.005								

¹SIZE

B: < 2"

A: 2 - 3.25"

OV: > 3.25"

PO: PICKOUTS

²QUALITY

HH: HOLLOW HEART

BC: BROWN CENTER

VD: VASCULAR DISCOLORATION

IBS: INTERNAL BROWN SPOT

³SCAB DISEASE RATING

1: NO INFECTION

3: INTERMEDIATE

5: HIGHLY SUSCEPTIBLE

* TWO-YEAR AVERAGE

PLANTED MAY 5, 1997

[†]SNACK FOOD ASSOCIATION CHIP SCORE

OUT OF THE FIELD

RATINGS: 1 - 5

1: EXCELLENT

5: POOR

Michigan Table 3. LONG TYPES: EARLY HARVEST MONTCALM RESEARCH FARM SEPTEMBER 2, 1997 (120 DAYS)

LINE	CWT/A		PERCENT OF TOTAL ¹						TUBER QUALITY ²				TOTAL	3-YR AVG
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	HH	VD	IBS	BC	CUT	US#1 CWT/A
UMATILLA R. (A082611-7)	222	345	65	34	59	6	2	1.084	1	0	0	0	16	234
CENTURY RUSSET	192	287	67	33	63	4	1	1.082	2	1	0	0	7	284*
SHEPODY	188	250	75	24	67	8	1	1.075	2	2	0	0	15	221
A84118-3	130	222	59	41	57	2	0	1.086	2	0	0	0	4	122
RUSSET BURBANK	111	197	56	41	55	1	3	1.073	0	1	0	0	2	177
A8495-1	106	245	43	56	43	0	0	1.084	0	0	0	0	0	85*
MSE192-8RUS	96	208	46	50	44	2	4	1.067	0	0	0	0	2	-
JS111-28	92	177	52	47	52	0	1	1.074	0	0	0	0	0	178
P88-13-4	91	292	31	69	31	0	0	1.087	0	0	0	0	1	-
RB NEWLEAF	90	197	46	52	46	0	2	1.071	0	0	0	0	0	127*
MSB106-7	88	188	47	53	47	0	0	1.057	0	0	0	0	0	-
A7961-1	77	218	36	64	35	1	0	1.085	0	0	0	0	2	203
MEAN	124	235						1.077						
LSD(0.05)	27	29						0.003						

¹SIZE

B: < 4 oz.

A: 4 - 10 oz.

OV: > 10 oz.

PO: PICKOUTS

²QUALITY

HH: HOLLOW HEART

BC: BROWN CENTER

VD: VASCULAR DISCOLORATION

IBS: INTERNAL BROWN SPOT

* TWO-YEAR AVERAGE

PLANTED MAY 5, 1997

Michigan Table 4. LONG TYPES: LATE HARVEST MONTCALM RESEARCH FARM SEPTEMBER 18, 1997 (136 DAYS)

LINE	CWT/A		PERCENT OF TOTAL ¹							TUBER QUALITY ²				TOTAL		3-YR AVG
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP	GR	HH	VD	IBS	BC	CUT	SCAB ³	US#1 CWT/A
UMATILLA R. (A082611-7)	225	320	70	24	62	9	6	1.082		5	0	0	0	40	1.0	276
CENTURY RUSSET	199	272	73	27	66	8	0	1.081		2	5	0	0	40	3.1	304*
SHEPODY	187	233	80	18	69	11	2	1.074		1	4	0	0	40	3.8	270
MSE202-3RUS	139	212	66	32	64	2	2	1.078		2	1	0	0	40	1.0	272*
A84118-3	125	216	58	42	57	1	0	1.084		7	8	0	0	40	1.0	182
A8495-1	118	224	53	47	51	2	0	1.083		4	3	0	0	40	1.0	107*
MSB106-7	115	195	59	41	56	2	1	1.057		0	8	2	0	40	1.3	270*
A7961-1	105	214	49	50	47	2	1	1.084		6	8	0	0	40	1.0	270
P88-13-4	97	248	39	61	39	0	0	1.087		0	1	0	0	40	3.0	-
RUSSET BURBANK	95	185	51	39	51	0	10	1.071		1	13	0	1	40	1.0	219
JS111-28	87	157	55	40	55	0	5	1.073		3	10	1	0	40	1.0	279
RB NEWLEAF	78	168	47	46	46	1	8	1.066		2	5	0	1	40	-	143*
MEAN	131	220						1.077								
LSD(0.05)	45	47						0.003								

¹SIZE

B: < 4 oz.

A: 4 - 10 oz.

OV: > 10 oz.

PO: PICKOUTS

²QUALITY

HH: HOLLOW HEART

BC: BROWN CENTER

VD: VASCULAR DISCOLORATION

IBS: INTERNAL BROWN SPOT

³SCAB DISEASE RATING

1: NO INFECTION

3: INTERMEDIATE

5: HIGHLY SUSCEPTIBLE

* TWO-YEAR AVERAGE

PLANTED MAY 5, 1997

Michigan Table 5. NORTH CENTRAL REGIONAL TRIAL MONTCALM RESEARCH FARM SEPTEMBER 23, 1997
(140 DAYS)

LINE	CWT/A		PERCENT OF TOTAL ¹								TUBER QUALITY ²				TOTAL		MERIT
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP	GR	SFA†	HH	VD	IBS	BC	CUT	SCAB ³	RATING
W1313	313	349	90	9	80	10	1	1.094	1.5		23	0	2	0	40	3.0	2
ATLANTIC	277	302	92	7	72	19	1	1.089	1.5		19	2	0	0	40	3.3	4
MN16489	265	301	88	11	82	6	1	1.077	1.0		3	0	0	0	40	1.9	1
RED PONTIAC	256	288	89	5	60	29	6	1.061	3.0		30	1	0	0	40	2.6	
MSB076-2	244	314	78	22	75	2	1	1.094	1.5		3	0	0	0	40	1.8	3
MN16966	238	313	76	22	75	1	2	1.087	1.5		4	6	0	0	40	3.0	5
NORCHIP	209	260	81	14	75	6	6	1.075	1.5		0	14	0	0	40	1.8	
SNOWDEN	192	247	78	22	76	2	0	1.084	1.0		3	5	0	0	40	2.5	
MSB106-7	186	258	72	24	68	4	4	1.059	3.0		0	10	0	0	40	1.3	
ND2676-10	181	249	73	27	72	0	0	1.074	1.0		1	13	0	0	40	1.5	
ND3828-15	173	231	75	18	72	3	7	1.065	1.5		0	8	2	6	40	2.7	
RED NORLAND	172	197	87	11	83	5	2	1.055	3.0		2	3	0	0	40	1.0	
MSB073-2	172	254	68	31	67	0	2	1.085	1.5		2	4	0	0	40	1.8	
MN16180	148	232	64	36	63	1	0	1.065	2.0		0	19	0	0	40	2.3	
W1151RUS	136	207	65	34	62	3	1	1.064	3.0		9	2	0	0	40	1.3	
RUSSET BURBANK	131	225	58	28	48	11	13	1.073	2.0		16	1	1	0	40	1.0	
RUSSET NORKOTAH	127	203	63	37	54	8	0	1.066	3.0		8	6	0	2	40	1.8	
W1348RUS	124	225	55	44	52	3	1	1.075	2.0		14	0	0	0	40	1.0	
ND2225-1R	100	172	58	41	58	0	0	1.056	3.0		0	4	0	0	40	3.3	
MEAN	192	254						1.074									
LSD(0.05)	55	50						0.003									

²SIZE

B: < 2

A: 2 - 3.25

OV: > 3.25

PO: PICKOUTS

²QUALITY

HH: HOLLOW HEART

BC: BROWN CENTER

VD: VASCULAR DISCOLORATION

IBS: INTERNAL BROWN SPOT

³SCAB DISEASE RATING

1: NO INFECTION

3: INTERMEDIATE

5: HIGHLY SUSCEPTIBLE

[†]SNACK FOOD ASSOCIATION CHIP SCORE

OUT OF THE FIELD

RATINGS: 1 - 5

1: EXCELLENT

5: POOR

PLANTED MAY 6, 1997

Michigan Table 6. EUROPEAN / YELLOW TRIAL MONTCALM RESEARCH FARM SEPTEMBER 10, 1997
(128 DAYS)

LINE	CWT/A		PERCENT OF TOTAL ¹						TUBER QUALITY ²					TOTAL	
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SFA†	HH	VD	IBS	BC	CUT	SCAB ³
MSE222-5Y	228	290	79	16	71	8	6	1.077	3.0	0	0	1	1	40	3.0
MSE048-2Y	217	249	87	12	81	6	2	1.087	2.0	8	1	0	0	30	2.1
MSE149-5Y	181	235	77	21	73	4	2	1.076	1.0	2	0	0	0	39	2.0
MSE226-4Y	180	242	74	23	69	5	3	1.066	2.0	1	0	0	0	40	1.9
LATONA	168	265	63	27	62	2	10	1.081	2.5	0	5	0	0	40	2.0
OBELIX	167	238	70	23	66	4	7	1.063	2.5	0	8	1	0	40	3.0
MICHIGOLD	149	211	70	29	70	0	1	1.083	1.5	0	6	0	0	40	2.8
YUKON GOLD	143	175	82	16	79	3	2	1.076	2.5	1	23	0	0	40	3.0
SAGINAW GOLD	138	213	65	34	64	1	1	1.074	1.0	0	0	0	0	40	1.5
IS. SUNSET	136	202	67	32	66	1	0	1.069	3.0	0	5	0	0	40	3.0
MSA097-1Y	129	189	68	25	68	1	7	1.079	2.0	0	1	0	0	40	1.7
MSC120-1Y	107	169	63	35	63	0	1	1.076	2.0	0	8	0	0	40	1.5
SNOWDEN	107	196	54	45	54	0	1	1.085	1.0	0	13	0	0	40	2.5
DALI	76	200	38	53	38	0	9	1.066	3.0	0	9	0	0	40	2.5
MSD029-3Y	70	124	57	42	57	0	1	1.072	-	0	5	0	0	40	2.4
MATILDA	65	201	32	68	32	0	0	1.088	2.5	0	9	0	0	35	2.3
MSD040-4RY	63	161	39	60	39	0	1	1.086	-	0	0	0	0	30	2.0
MSE048-1Y	24	99	25	75	25	0	0	1.073	-	0	0	0	0	5	3.3
MEAN	130	203						1.077							
LSD(0.05)	34	35						0.003							

¹SIZE

B: < 2"

A: 2 - 3.25"

OV: > 3.25"

PO: PICKOUTS

²QUALITY

HH: HOLLOW HEART

BC: BROWN CENTER

VD: VASCULAR DISCOLORATION

IBS: INTERNAL BROWN SPOT

³SCAB DISEASE RATING

1: NO INFECTION

3: INTERMEDIATE

5: HIGHLY SUSCEPTIBLE

PLANTED MAY 5, 1997

[†]SNACK FOOD ASSOCIATION CHIP SCORE
OUT OF THE FIELD

RATINGS: 1 - 5

1: EXCELLENT

5: POOR

Michigan Table 7A. Ranking of Important Potato Varieties and Advanced Breeding Lines in Scab Trial (1997)

<u>Low Infection</u>	<u>Intermediate</u>	<u>Highly Susceptible</u>
A082611-7	Atlantic	B0984-3
A7961-1	Century Russet	B1004-8
A84118-3	FL1879	MSB054-4
BC0894-2	Island Sunset	MSB057-2
FL1833	Michigold	MSE011-10
MSA091-1	MSB094-1	MSE041-1
MSB040-3	MSC148-A	MSF165-6RY
MSB073-2	MSE018-1	MSF349-1
MSB076-2	MSE048-2Y	MSG049-4
MSB107-1	MSE149-5Y	MSG049-7
MSC103-2	MSE222-5	P83-6-18
MSC120-1Y	MSE228-1	Shepody
MSE009-1	MSE230-3	
MSE192-8Rus	MSE234-3	
MSE202-3Rus	MSE250-2	
MSE221-1	MSF001-2	
MSE226-4Y	MSF002-1	
MSE226-5Y	MSF019-11	
MSE228-11	MSF099-3	
MSE228-9	MSF100-1	
MSE230-13	MSF105-10	
MSE230-6	MSF194-3	
MSE245-B	MSF373-8	
MSE246-5	MSG077-7Y	
MSE263-10	MSG104-6	
MSF014-9	MSG135-5	
MSF015-1	MSG261-3	
MSF087-3	NY103	
MSF313-3	NY115	
MSG124-8P	P63-1	
MSG227-2	Snowden	
MSG236-1	W1313	
MSG301-9	Yukon	
MSNT-1		
ND2676-10		
NY101		
Onaway		
P32-3		
Q8-2		
Russet Burbank		
W1151		

Michigan Table 7B. 1994-97 MICHIGAN SCAB TRIAL RESULTS, MSU Soils Farm

Line	1994 Rating ¹	1995 Rating	1996 Rating	1997 Rating	Line	1994 Rating	1995 Rating	1996 Rating	1997 Rating
A082611-7	2.5	1.0	1.0	1.0	MSE048-2Y	-	1.5	2.0	2.1
A7961-1	1.0	1.0	1.0	1.0	MSE149-5Y	-	-	2.0	2.0
A84118-3	-	1.5	1.0	1.0	MSE192-8	-	1.0	-	1.3
A8495-1	1.5	1.0	-	1.0	MSE202-3	-	-	2.0	1.0
AF1433-4	1.0	-	3.0	1.8	MSE221-1	-	1.5	1.0	1.0
ATLANTIC	2.5	3.0	3.5	3.3	MSE222-5Y	-	2.0	-	3.0
ATX 85404-8	-	-	3.0	1.6	MSE226-4Y	-	1.5	1.5	1.9
BC0894-2	-	-	2.0	1.3	MSE228-1	-	2.0	-	2.7
C0083008-1	1.0	1.0	1.0	-	MSE228-9	-	1.5	1.5	1.8
CENTURY RUSSET	2.5	-	3.5	3.1	MSE228-11	-	3.5	3.0	1.5
CHALEUR	1.5	3.0	-	-	MSE230-6	-	2.5	1.5	1.5
FL1533	2.5	3.0	-	-	MSE250-2	-	2.0	-	3.2
FL1833	3.0	2.0	1.5	1.7	MSNT-1	3.0	-	1.0	1.0
FL1863	-	3.0	2.0	-	ND2225-1R	-	-	2.0	3.3
FL1867	-	-	2.0	1.3	ND2676-10	-	-	1.5	1.5
GOLDRUSH	1.5	1.0	1.0	-	ND860-2	3.5	-	3.0	3.0
ISLAND SUNSHINE	-	2.5	4.5	-	NEWLEAF-RB	-	-	1.0	-
JS111-28	-	-	1.0	1.0	NORCHIP	1.5	-	3.0	1.8
LEMHI RUSSET	1.0	1.0	-	-	NORVALLEY	3.5	3.5	3.5	-
MAINESTAY	4.0	3.0	4.5	-	NY101	1.5	1.0	1.0	1.0
MATILDA	-	2.0	2.0	2.3	NY103	-	3.5	3.0	2.5
MICHIGOLD	2.0	-	4.0	2.8	ONAWAY	1.0	1.5	1.5	1.0
MN16180	-	-	3.0	2.3	P84-13-12	1.0	1.5	3.0	-
MN16489	-	-	2.0	1.9	P88-13-4	-	2.0	-	3.0
MSA091-1	2.0	1.5	1.0	1.8	P88-15-1	2.5	3.5	-	3.0
MSA097-1Y	1.5	-	2.0	1.7	PENTA	3.0	4.5	-	-
MSB027-1R	3.0	-	4.0	1.5	PICASSO	-	-	1.5	-
MSB040-3	1.0	-	1.0	1.8	PIKE	-	1.0	1.5	1.7
MSB057-2	3.0	-	3.0	4.1	PORTAGE	3.5	2.5	-	-
MSB073-2	-	-	1.5	1.8	PREMIER	-	-	3.5	-
MSB076-2	1.0	1.5	1.5	1.8	PRESTILE	1.0	1.0	-	-
MSB083-1	1.5	2.5	3.0	-	R. BURBANK	2.0	2.0	1.0	1.0
MSB094-1	2.0	-	3.0	3.0	R. NORKOTAH	1.5	-	-	1.8
MSB106-7	1.0	-	3.0	1.3	RED NORLAND	2.0	-	2.0	1.0
MSB107-1	2.5	2.5	2.5	1.8	RED PONTIAC	5.0	2.5	4.0	2.6
MSC010-20Y	-	1.5	2.0	-	REDDALE	-	-	2.0	-
MSC098-2	2.0	-	3.5	-	SAGINAW GOLD	3.0	3.0	2.5	1.5
MSC103-2	3.0	-	2.0	-	SANTE	3.5	3.0	-	-
MSC120-1Y	1.0	-	2.5	1.5	SHEPODY	-	4.5	4.0	3.8
MSC121-7	3.0	-	4.0	-	SNOWDEN	2.0	3.5	3.0	2.5
MSC122-1	1.5	-	1.5	-	ST. JOHNS	3.0	3.0	4.0	-
MSC125-8	1.0	-	2.0	-	SUPERIOR	1.0	1.5	-	-
MSC148-A	-	2.5	2.5	2.4	W1151	-	-	1.5	1.3
MSE018-1	-	3.5	3.0	2.6	W1313	-	-	2.5	3.0
MSE041-1	-	3.0	3.5	4.3	YUKON GOLD	-	3.5	2.0	3.0

¹SCAB RATING

1 = practically no infection

2 = low infection

3 = avg. susc. (i.e. Atlantic)

4 = susc. (high)

5 = severe susc.

Michigan Table 8A. 1997 BLACKSPOT BRUISE SUSCEPTIBILITY SAMPLES

A. SIMULATED BRUISE SAMPLES

A. SPOTATED BRUISE SAMPLES							PERCENT		
VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	BRUISE FREE	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+			
DATE OF HARVEST: LONG-LATE									
SHEPODY	24						24	100	0.000
A7961-1	23	1					24	96	0.042
CENTURY RUSSET	23	1					24	96	0.042
E202-3RUS	23	1					24	96	0.042
R. BURBANK	23	1					24	96	0.042
RB NEWLEAF	23	1					24	96	0.042
JS111-28	24	2					26	92	0.077
A84118-3	22	2					24	92	0.083
B106-7	22	2					24	92	0.083
A8495-1	21	4					25	84	0.160
P88-13-4	20	4					24	83	0.167
UMATILLA RUS.	17	6	1				24	71	0.333
DATE OF HARVEST: ROUND WHITES-LATE									
E221-1	24						24	100	0.000
NY103	24	1					25	96	0.040
C103-2	23	1					24	96	0.042
FL1879	23	1					24	96	0.042
B040-3	22	2					24	92	0.083
B073-2	21	3					24	88	0.125
E228-11	21	3					24	88	0.125
E228-9	21	3					24	88	0.125
NY101	21	2	1				24	88	0.167
REBA	20	4					24	83	0.167
PIKE	21	2		1			24	88	0.208
ONAWAY	20	2		1			23	87	0.217
FL1833	17	7					24	71	0.292
SNOWDEN	15	9					24	63	0.375
A091-1	15	8	1				24	63	0.417
FL1831	14	6	4				24	58	0.583
NT-1	13	7	4				24	54	0.625
B076-2	12	8	4				24	50	0.667
FL1869	15	4	3	2			24	63	0.667
C148-A	11	8	5				24	46	0.750
ATL NEWLEAF	11	10	1	1	1		24	46	0.792
B107-1	10	11	1	2			24	42	0.792
ATLANTIC	10	9	4			1	24	42	0.917
E018-1	9	6	5	4			24	38	1.167
B057-2	8	7	3	3	1	1	23	35	1.348

Michigan Table 8A. (Continued)

VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	PERCENT	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+		BRUISE FREE	
<u>NORTH CENTRAL REGIONAL TRIAL</u>									
R. NORKOTAH	24						24	100	0.000
ND2676-10	20	2					22	91	0.091
RED NORLAND	21	3					24	88	0.125
W1151RUS	21	3					24	88	0.125
R. BURBANK	20	4					24	83	0.167
RED PONTIAC	19	5					24	79	0.208
ND2225-1R	17	5	1				23	74	0.304
MN16489	16	8					24	67	0.333
NORCHIP	16	6	1				23	70	0.348
SNOWDEN	17	6		1			24	71	0.375
B073-2	16	6	1	1			24	67	0.458
MN16180	14	5	3	1			23	61	0.609
ND3828-15	10	9	2				21	48	0.619
MN16966	11	11	1	1			24	46	0.667
B076-2	8	10	6				24	33	0.917
B106-7	8	10	5	1			24	33	0.958
W1348RUS	9	8	6			1	24	38	1.042
ATLANTIC	7	9	5	1	1	1	24	29	1.292
W1313	0	5	8	6	4	1	24	0	2.500
<u>YELLOW FLESH & EUROPEAN TRIAL</u>									
DALI	23	1					24	96	0.042
LATONA	23	1					24	96	0.042
YUKON GOLD	23	1					24	96	0.042
D029-3Y	21	3					24	88	0.125
E226-4Y	22	1	1				24	92	0.125
OBELIX	22	1	1				24	92	0.125
E222-5Y	20	4					24	83	0.167
IS. SUNSET	20	4					24	83	0.167
MICHIGOLD	20	4					24	83	0.167
E048-2Y	18	5	1				24	75	0.292
A097-1Y	13	11					24	54	0.458
E149-5Y	16	5	1	2			24	67	0.542
SAGINAW GOLD	15	6	2	1			24	63	0.542
C120-1Y	13	7	3				23	57	0.565
MATILDA	8	13	1				22	36	0.682
SNOWDEN	12	7	5				24	50	0.708
JULIANNA ROSE	8	10	4	2			24	33	1.000
<u>MSU BREEDING LINES 2 X 23 TRIAL</u>									
B094-1	20						20	100	0.000
A110-2	19	1					20	95	0.050
B027-1RUS	18	2					20	90	0.100
F090-1	18	2					20	90	0.100
G209-1	18	2					20	90	0.100

Michigan Table 8A. (Continued)

VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	PERCENT BRUISE FREE	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+			
E033-1RD	17	3					20	85	0.150
F373-A	18	2					20	90	0.100
ND860-2	17	3					20	85	0.150
G141-3	15	4					19	79	0.211
G124-8P	14	4					18	78	0.222
YUKON GOLD	14	4					18	78	0.222
G077-7Y	17	2		1			20	85	0.250
G119-1RD	15	3	1				19	79	0.263
B054-4	16	2	2				20	80	0.300
G010-11	13	6					19	68	0.316
G104-6	13	7					20	65	0.350
G007-1	12	8					20	60	0.400
G080-1	13	6	1				20	65	0.400
G012-1RD	13	4	2				19	68	0.421
G296-3	12	7	1				20	60	0.450
ONAWAY	14	3	2	1			20	70	0.500
G050-2	13	2		1	1		17	76	0.529
G236-1	11	5	3				19	58	0.579
P84-12-7	11	5	2	1			19	58	0.632
G227-2	10	8	1	1			20	50	0.650
E215-12	8	9	2				19	42	0.684
SNOWDEN	10	6	2	1			19	53	0.684
G049-7	10	6	4				20	50	0.700
A105-1	10	6	3	1			20	50	0.750
G0803-1RD	10	7	1	2			20	50	0.750
G274-3	8	8	2	1			19	42	0.789
G287-4	8	7	4	1			20	40	0.900
F321-5	6	8	5				19	32	0.947
G135-12	5	12	1	2			20	25	1.000
P84-9-8	7	7	4	2			20	35	1.050
F313-3	8	4	4	4			20	40	1.200
G163-1	6	10	1	1	1	1	20	30	1.200
E226-5	5	8	4	3			20	25	1.250
ATLANTIC	8	3	4	5			20	40	1.300
F327-G	7	4	5	1	2		19	37	1.316
G139-1	3	8	7	1	1		20	15	1.450
G245-2	3	9	5	2	1		20	15	1.450
G261-3	5	9	3	3	3		23	22	1.565
G301-9	3	8	4	3	1	1	20	15	1.700
G049-4	0	8	4	1	2		15	0	1.800
G260-4	3	4	3	4	2		16	19	1.875
G297-4RD	3	6	5	3	2	1	20	15	1.900
G135-5	3	6	3	5	3		20	15	1.950
G251-10	3	7	1	6	3		20	15	1.950
G079-2	1	5	7	6	1		20	5	2.050
G295-5	3	5	5	4	2	2	21	14	2.143

Michigan Table 8A. (Continued)

VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	PERCENT BRUISE FREE	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+			
<u>ADAPTATION 4 X 23 TRIAL</u>									
E228-1	22	1	1				24	92	0.125
F002-1	20	4					24	83	0.167
B0984-3	21	1	2				24	88	0.208
E041-1	19	5					24	79	0.208
E026-B	19	3	1				23	83	0.217
E230-6	18	6					24	75	0.250
P63-1	18	6					24	75	0.250
F014-9	17	6					23	74	0.261
P83-6-18	16	7					23	70	0.304
E030-4	15	5	2				22	68	0.409
E230-3	13	8	1				22	59	0.455
F020-23	15	8		1			24	63	0.458
E080-4	16	5	2			1	24	67	0.583
F099-3	12	8	3				23	52	0.609
ONAWAY	12	8	3				23	52	0.609
E009-1	15	7	3	1			26	58	0.615
F001-2	18	1	2	2	1		24	75	0.625
F165-6RY	13	5	3	2			23	57	0.739
P73-2	12	7	2	2			23	52	0.739
P32-3	10	11	2	1			24	42	0.750
E263-3	10	11	4				25	40	0.760
Q8-2	12	5	7				24	50	0.792
B0856-4	15	3	3	2		1	24	63	0.833
B1004-8	10	9	4		1		24	42	0.875
SNOWDEN	8	11	5				24	33	0.875
E263-10	10	6	6	1			23	43	0.913
F087-3	11	5	6		1		23	48	0.913
F068-5	6	14	2	2			24	25	1.000
B0915-3	7	12	2	3			24	29	1.042
F349-1RY	12	3	6	2	1		24	50	1.042
F105-10	7	11	2	3			23	30	1.043
E245-B	7	11	3	3			24	29	1.083
F019-11	8	9	5	1	1		24	33	1.083
P88-15-1	7	8	8	1			24	29	1.125
E234-3	12	4	4	1	2	1	24	50	1.167
F373-8	6	9	5	2	1	1	24	25	1.417
F019-2	7	4	10	2	1		24	29	1.417
E250-2	3	8	10	3			24	13	1.542
F093-5	3	11	5	4	1		24	13	1.542
E213-2	5	6	11	1	2		25	20	1.560
F015-1	2	10	8	3	1		24	8	1.625
F100-1	3	8	4	9			24	13	1.792
E011-10	4	5	7	5	2		23	17	1.826

Michigan Table 8A. (Continued)

VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	PERCENT BRUISE FREE	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+			
E246-5	5	5	5	5	3	1	24	21	1.958
E247-2	4	3	2	5	3	7	24	17	2.875

SNACK FOOD ASSOCIATION (SFA) TRIAL

AF1433-3	23	2					25	92	0.080
ND2676-10	24	3					27	89	0.111
NY115	20	3	2				25	80	0.280
ATLANTIC	21	7	1				29	72	0.310
ATL NEWLEAF	14	8					22	64	0.364
NY103	15	10					25	60	0.400
SNOWDEN	16	7	2				25	64	0.440
B0564-8	14	9	1	1			25	56	0.560
BCO894-2	11	11	2	1			25	44	0.720
ATX85404-8	11	10	4				25	44	0.720

* Tuber samples were collected at harvest, graded, and placed in a six-sided plywood drum and rotated ten times to produce simulated bruising. Samples were abrasive-peeled and scored on October 23, 1997.

Table is presented in descending order of average number of spots per tuber.

Michigan Table 8B. 1997 BLACKSPOT BRUISE SUSCEPTIBILITY SAMPLES

B. CHECK BRUISE SAMPLES**

VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	BRUISE FREE (%)	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+			
<u>DATE OF HARVEST: LONG-LATE</u>									
E202-3RUS	24						24	100	0.000
JS111-28	24						24	100	0.000
R. BURBANK	24						24	100	0.000
RB NEWLEAF	24						24	100	0.000
SHEPODY	24						24	100	0.000
A7961-1	23	1					24	96	0.042
A8495-1	23	1					24	96	0.042
P88-13-4	23	1					24	96	0.042
B106-7	22	1					23	96	0.043
UMATILLA RUS.	23	2					25	92	0.080
A84118-3	22	2					24	92	0.083
CENTURY RUSSET	21	3					24	88	0.125

DATE OF HARVEST: ROUND WHITES-LATE

B107-1	24						24	100	0.000
C103-2	24						24	100	0.000
B040-3	23	1					24	96	0.042
E018-1	23	1					24	96	0.042
E228-11	23	1					24	96	0.042
FL1869	23	1					24	96	0.042
NT-1	23	1					24	96	0.042
NY101	23	1					24	96	0.042
NY103	23	1					24	96	0.042
ONAWAY	23	1					24	96	0.042
REBA	23	1					24	96	0.042
E228-9	23	2					25	92	0.080
A091-1	22	2					24	92	0.083
FL1879	22	2					24	92	0.083
B073-2	21	3					24	88	0.125
B076-2	22	1		1			24	92	0.167
SNOWDEN	20	4					24	83	0.167
C148-A	20	3	1				24	83	0.208
FL1833	19	3	1				23	83	0.217
PIKE	15	4	1				20	75	0.300
E221-1	16	8					24	67	0.333
FL1831	19	2	3				24	79	0.333
ATL NEWLEAF	17	4	2	1			24	71	0.458
B057-2	14	9	1				24	58	0.458
ATLANTIC	13	7	2				22	59	0.500

NORTH CENTRAL REGIONAL TRIAL

R.NORKOTAH	24						24	100	0.000
B073-2	24						24	100	0.000
RED NORLAND	24						24	100	0.000
RED PONTIAC	23	1					24	96	0.042
NORCHIP	23	1					24	96	0.042

Michigan Table 8b. (Continued)

VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	BRUISE FREE (%)	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+			
ND2676-10	23	1					24	96	0.042
R. BURBANK	23	1					24	96	0.042
SNOWDEN	22	2					24	92	0.083
MN16180	22	2					24	92	0.083
W1151RUS	22	2					24	92	0.083
ND2225-1R	20	4					24	83	0.167
ND3828-15	20	4					24	83	0.167
MN16966	19	4					23	83	0.174
B106-7	20	3	1				24	83	0.208
W1313	19	5					24	79	0.208
MN16489	19	3	1				23	83	0.217
W1348RUS	17	6	1				24	71	0.333
B076-2	16	8					24	67	0.333
ATLANTIC	8	13	1	1	1		24	33	0.917
<u>YELLOW FLESH & EUROPEAN TRIAL</u>									
D029-3Y	24						24	100	0.000
DALI	23						23	100	0.000
E230-6	24						24	100	0.000
LATONA	24						24	100	0.000
E048-2Y	23	1					24	96	0.042
E226-4Y	23	1					24	96	0.042
MICHIGOLD	23	1					24	96	0.042
OBELIX	23	1					24	96	0.042
E149-5Y	22	2					24	92	0.083
SAGINAW GOLD	22	2					24	92	0.083
SNOWDEN	22	2					24	92	0.083
A097-1Y	22	1	1				24	92	0.125
E222-5Y	22	1	1				24	92	0.125
IS. SUNSET	21	3					24	88	0.125
C120-1Y	18	6					24	75	0.250
JULIANNA ROSE	17	5		1			23	74	0.348
MATILDA	12	10					22	55	0.455
<u>MSU BREEDING LINES 2 X 23 TRIAL</u>									
A110-2	20						20	100	0.000
G301-9	19						19	100	0.000
G012-1RD	20						20	100	0.000
F373-A	20						20	100	0.000
G050-2	18						18	100	0.000
F090-1	20						20	100	0.000
P84-12-7	19	1					20	95	0.050
G119-1RD	19	1					20	95	0.050
P84-9-8	19	1					20	95	0.050
G163-1	19	1					20	95	0.050
B027-1RUS	19	1					20	95	0.050
G010-11	19	1					20	95	0.050

Michigan Table 8b. (Continued)

VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	BRUISE FREE (%)	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+			
SNOWDEN	19	1					20	95	0.050
G077-7Y	19	1					20	95	0.050
YUKON GOLD	17	1					18	94	0.056
G236-1	23	2					25	92	0.080
ONAWAY	18	2					20	90	0.100
G135-12	18	2					20	90	0.100
F321-5	18	2					20	90	0.100
G083-1RD	18	2					20	90	0.100
G227-2	18	2					20	90	0.100
G287-4	18	2					20	90	0.100
G141-3	17	2					19	89	0.105
B094-1	16	2					18	89	0.111
F313-3	16	2					18	89	0.111
A105-1	18	1	1				20	90	0.150
G209-1	17	3					20	85	0.150
ND860-2	17	3					20	85	0.150
G139-1	17	3					20	85	0.150
G104-6	17	3					20	85	0.150
E215-12	16	3					19	84	0.158
G007-1	16	4					20	80	0.200
B054-4	17	2	1				20	85	0.200
E033-1RD	17	2	1				20	85	0.200
F327-G	16	4					20	80	0.200
G079-2	16	4					20	80	0.200
G296-3	16	4					20	80	0.200
ATLANTIC	16	4					20	80	0.200
G080-1	15	5					20	75	0.250
E226-5	16	6					22	73	0.273
G261-3	14	6					20	70	0.300
G049-7	16	3		1			20	80	0.300
G245-2	12	7					19	63	0.368
G260-4	15	3	1	1			20	75	0.400
G049-4	12	7	1				20	60	0.450
G297-4RD	12	7		1			20	60	0.500
G135-5	13	5		2			20	65	0.550
G251-10	9	6	4		1		20	45	0.900
G295-5	7	9	1	1		1	19	37	1.000
<u>ADAPTATION 4 X 23 TRIAL</u>									
B0984-3	24						24	100	0.000
B1004-8	24						24	100	0.000
E009-1	24						24	100	0.000
E041-1	24						24	100	0.000
E228-1	24						24	100	0.000
E230-3	23						23	100	0.000
E250-2	24						24	100	0.000
F002-1	24						24	100	0.000

Michigan Table 8b. (Continued)

VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	BRUISE FREE (%)	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+			
F014-9	24						24	100	0.000
F019-2	24						24	100	0.000
F099-3	24						24	100	0.000
F165-6RY	24						24	100	0.000
E026-B	23	1					24	96	0.042
E234-3	23	1					24	96	0.042
E245-B	23	1					24	96	0.042
F001-2	23	1					24	96	0.042
F020-23	23	1					24	96	0.042
F349-IRY	23	1					24	96	0.042
P63-1	23	1					24	96	0.042
P83-6-18	23	1					24	96	0.042
SNOWDEN	23	1					24	96	0.042
E213-2	22	2					24	92	0.083
E263-3	22	2					24	92	0.083
F087-3	22	2					24	92	0.083
B0856-4	21	3					24	88	0.125
F068-5	22	1	1				24	92	0.125
F194-3	21	3					24	88	0.125
ONAWAY	21	3					24	88	0.125
E263-10	20	4					24	83	0.167
F100-1	19	4					23	83	0.174
E080-4	20	3	1				24	83	0.208
F019-11	19	5					24	79	0.208
E030-4	20	4	1				25	80	0.240
P73-2	18	6					24	75	0.250
F105-10	17	7					24	71	0.292
F373-8	17	7					24	71	0.292
P32-3	20	2	1	1			24	83	0.292
B0915-3	17	6	1				24	71	0.333
F015-1	17	6	1				24	71	0.333
F093-5	13	4	1				18	72	0.333
F88-15-1	18	4	2				24	75	0.333
E011-10	15	7	1				23	65	0.391
E247-2	16	4	1	2			23	70	0.522
E246-5	14	7	1	2			24	58	0.625
Q8-2	13	7	4				24	54	0.625
SNACK FOOD ASSOCIATION (SFA) TRIAL									
NY115	23	2					25	92	0.080
ATL NEWLEAF	23	1	1				25	92	0.120
NY103	21	4					25	84	0.160
ND2676-10	20	5					25	80	0.200
AF1433-3	20	4		1			25	80	0.280
ATLANTIC	17	8					25	68	0.320
SNOWDEN	17	8					25	68	0.320
B0564-8	20	5	2				27	74	0.333

Michigan Table 8b. (Continued)

VARIETY	NUMBER OF SPOT PER TUBER						TOTAL TUBERS	BRUISE FREE (%)	AVERAGE SPOTS/TUBER
	0	1	2	3	4	5+			
ATX85404-8	12	11	2				25	48	0.600
BCO894-2	11	9	6				26	42	0.808

** Tuber samples were collected at harvest, graded, and placed in a six-sided plywood drum and rotated ten times to produce simulated bruising. Samples were abrasive-peeled and scored on October 23, 1997.

Michigan Table 9. 1997 RESULTS FROM MSU LATE BLIGHT VARIETY TRIAL⁽¹⁾

Resistant ⁽²⁾	Moderately Resistant		Reduced Susceptibility			Susceptible ⁽³⁾
AWN86514-2	A080432-1	Lily	A84118-3	MSB027-1Rus	MSF105-10	Atlantic
B0288-17	A082611-7	Matilda	Allegany	MSB040-3	MSF165-6RY	Century Russet
B0692-4	A084275-3	MSE230-6	Alpha	MSB076-2	MSF373-8	Onaway
B0718-3	B0749-2F	MSE246-5	B0811-13	MSB107-1	MSG007-1	R. Norkotah
B0767-2	B1004-8	MSG139-1	B0856-4	MSC103-2	MSG050-2	R. Burbank
Bertita	C0083008-1	MSG163-1	B0915-3	MSC120-1Y	MSG135-5	Shepody
Bzura	Dorita	NorDonna	Dali	MSE009-1	MSG297-4RD	Yukon Gold
MSG274-3	Elba	Obelix	Desiree	MSE018-1	ND2676-10	Norchip
	Greta	Ontario	FL1879	MSE222-5Y	Pike	
	Hindenburg	Pimpernel	Hampton	MSE263-10	R. Norland	
	Is. Sunshine	Robijn	Is. Sunset	MSF001-2	Russian Blue	
	Krantz	Stobrawa	MN16489	MSF015-1	Snowden	
	Latona	Zarevo	MSA091-1	MSF019-11		
	Libertas					

(1) 33 days after inoculation with US-8 genotype of *P. infestans*

(2) RAUDPC < 0.15 = Resistant; 0.16 - 0.30 = Mod. Resistant; 0.31 - 0.45 = Reduced Susc.; > 0.45 = Susceptible

(3) Only named cultivars are listed

Low Tuber Infection				Moderate Tuber Infection				High Tuber Infection			
Clone	Avg. Width	Avg. Depth ¹		Clone	Avg. Width	Avg. Depth		Clone	Avg. Width	Avg. Depth	
B1004-8	3.6	2.3		MSF100-1	15.7	8.0	MSC120-1Y	MSB027-1R	16.9	16.2	
Snowden	9.5	3.1		MN16489	13.7	8.1	MSG012-1RD	MSF014-9	30.4	16.4	
MSF105-10	9.3	4.4		MSF093-5	19.6	8.3	Norchip	MSF313-3	11.5	16.4	
MSG236-1	3.4	4.5		MSG104-6	12.1	8.3	A7961-1	MSE228-1	42.1	17.1	
FL1833	13.8	4.6		MSB073-2	14.4	8.3	MSG301-9	MSG245-2	14.1	17.6	
MSE030-4	9.0	4.8		MSE222-5Y	12.0	8.4	MSE213-2	MSE226-5	29.6	17.6	
MSF194-3	8.1	5.1		MSE234-3	17.1	8.5	Red Norland	MSB054-4	12.5	17.7	
MSA091-1	13.1	5.6		MSC148-A	22.8	8.5	W1313	B0984-3	12.6	17.8	
P32-3	10.9	5.7		MSE247-2	23.8	8.5	MSG083-1RD	MSG287-4	9.2	18.0	
Shepody	17.4	5.8		MSG049-7	16.3	8.5	Michigold	MSG251-10	13.3	18.1	
MSF068-5	13.0	5.8		P84-9-8	9.2	8.6	MSG049-4	MSE250-2	25.3	18.3	
MSG080-1	11.0	5.9		W1151RUS	23.8	8.6	MSG135-5	MSG274-3	32.0	18.4	
MN16966	9.7	5.9		MSE230-3	14.7	8.7	MSC103-2	MSE041-1	25.3	18.5	
NY101	12.5	6.0		MSE018-1	14.7	8.7	MSG163-1	MN16180	14.4	18.6	
MSF087-3	12.5	6.1		MSE009-1	14.6	8.9	P88-15-1	MSG079-2	14.8	18.6	
MSNT-1	9.7	6.2		MSE221-1	14.1	9.0	W1834RUS	MSB040-3	36.5	18.6	
B0915-3	8.9	6.3		MSF015-1	18.3	9.0	MSE202-3RUS	MSF090-1	9.0	19.0	
NY103	14.7	6.4		MSB057-2	15.9	9.1	P84-12-7	Atlantic	9.6	19.1	
MSF002-1	26.9	6.5		Russet Burbank	10.8	9.1	Saginaw Gold	MSG227-2	10.3	19.4	
MSE263-10	12.0	6.7		A8495-1	16.4	9.2	MSF019-11	MSA105-1	10.5	19.5	
MSE080-4	13.8	7.0		MSG260-4	7.0	9.2	MSE149-5Y	MSE226-4Y	25.9	19.8	
MSF373-8	10.4	7.1		MSF099-3	16.2	9.3	FL1831	MSE215-12	12.9	20.1	
ND3828-15	14.4	7.2		MSF001-2	14.5	9.3	ND2225-1R	B0856-4	34.2	20.5	
Latona	15.2	7.3		MSG077-7Y	5.7	9.3	MSG007-1	MSB107-1	37.8	20.7	
P83-6-18	11.9	7.3		NY87-Reba	15.8	9.4	NYP73-2	Obelix	34.1	20.7	
MSE263-3	17.5	7.3		Matilda	14.2	9.5	Century R.	MSG050-2	10.0	20.9	
MSE246-5	14.1	7.4		FL1879	13.5	9.5	MSE245-B	MSG261-3	17.5	20.9	
MSE026-B	17.5	7.4		ND2676-10	18.1	9.5	MSG135-12	MSA110-2	12.6	21.0	
MSF349-1	17.0	7.5		Pike	22.2	9.6	MSB106-7	A082611-7	20.0	21.1	
MSF020-23	14.2	7.5		Is. Sunset	21.4	9.7	MSF373-A	ND860-2	13.4	21.7	
MSF019-2	14.1	7.7		Yukon Gold	5.3	9.9	MSE033-1RD	MSE048-2Y	58.8	21.7	
MSE228-9	15.9	7.7		MSB076-2	21.2	10.0	MSD029-3Y	MSG296-3	17.7	23.7	
MSF327-6	4.7	7.8		MSF165-6RY	18.8	10.0	ATL Newleaf	MSE228-11	35.9	23.7	
MSA097-1Y	15.5	7.9		MSB094-1	7.6	10.1	Onaway	MSG141-3	17.5	26.0	
NYP63-1	18.4	7.9		MSF321-5	6.3	10.1	MSG119-1RD	MSG010-11	27.8	33.8	
				P88-13-4	17.4	10.2	Red Pontiac	MSG124-8P	36.9	37.7	
				MSE011-10	20.5	10.2	RB Newleaf				
				FL1869	16.4	10.2	MSE230-6				
				MSG209-1	35.7	10.4	MSG139-1				
				A84118-3	10.2	10.4	MSG297-4RD				
				Dali	13.3	10.5	MSG295-5				

¹width and depth measured in mm

Minnesota Potato Variety Evaluations

C.A. Thill, R.L. Wenkel, D.K. Wildung, V.A. Fritz, N.A. Anderson, R. K. Jones, D.W. Ragsdale, E.B. Radcliffe, and C.A. Longtine.

The major objectives of the University of Minnesota potato varietal breeding program are to: 1. Identify superior varieties for fresh market and for processing. 2. Screen and evaluate wild and cultivated *Solanum* germplasm useful in varietal improvement. 3. Initiate and explore new breeding methods. 4. Evaluate germplasm developed outside the Minnesota program for adaptation to Minnesota growing environments.

Field experiments were conducted at six Minnesota (Grand Rapids, Becker, Rosemount, Crookston, Hollandale, Long Prairie) and one North Dakota (Grand Forks) locations. Grand Rapids is located in North Central Minnesota, is non-irrigated, has a cool, short (100 days) growing season, and has acid fine sandy forested soils. Becker is located in Central Minnesota, is irrigated, has Hubbard sandy soils, and has a 140 day growing season. Rosemount is located 30 miles South of St. Paul, Minnesota, is non-irrigated, has silt loam soils, and a 140 day growing season. Crookston, Minnesota and Grand Forks, North Dakota are located in the Red River Valley of Minnesota and North Dakota. Both sites are non-irrigated with a 95-110 day growing season. Crookston has Fargo clay soils, while Grand Forks has heavy silt clay loamy soils. Hollandale is located in South Central Minnesota, has organic peat soils, and a 120 day growing season and Long Prairie is located in Central Minnesota, has coarse sand soils, and a 120 day growing season. Trials at Grand Rapids, Becker, Rosemount, and Crookston are located on Minnesota Agricultural Experiment Stations, while those at Hollandale and Long Prairie are located on grower fields. Trials at Grand Forks are located at the Potato Research Farm of the Red River Valley Potato Growers Association.

Thill is the potato breeder and an assistant professor, Wenkel is the potato project research scientist, Wildung is a professor, and Fritz is an associate professor in the Department of Horticultural Science, University of Minnesota, St. Paul, MN 55108. Anderson is a professor, and Jones is an associate professor in the Department of Plant Pathology. Ragsdale is a professor, Radcliffe is a professor, and Longtine is a graduate student in the Department of Entomology at the University of Minnesota.

Our use of these locations is partitioned such that Grand Rapids is the primary location for maintaining and increasing our selections, Rosemount is used for disease screening, and the remaining locations are used for multiple selection environments. Typically, newer seedling selections are planted at multiple locations without replications, while preliminary advanced and advanced selections are planted at multiple locations with replications. All seedlings are evaluated for plant growth and tuber characteristics, total and marketable yield, specific gravity, the incidence of internal and external defects, and susceptibility to late blight, verticillium wilt, and common scab.

Early Generations

The winter 1996-1997 crossing program (by Interim Potato Breeder Dr. Jan E. Backlund) produced 443 hybrid families. Approximately one-half of this effort (227 hybrid families) was placed on preserving and enhancing germplasm (Genetic Series) unique to the Minnesota Potato Breeding Program and developed by Dr. Florian Lauer. The Genetic Series has both diploid and tetraploid clones developed for: 1) high protein, 17 clones; 2) chipping potential, 31 clones; 3) 2n pollen, 22 clones; 4) GPA resistance, 14 clones; 5) CPB resistance, 21 clones; 6) *S. Andigena*, 19 clones; and 7) cold chipping, 10 clones. The remaining 216 hybrids emphasized reds (50%), russets (30%), and round whites (20%) for fresh market and processing potential.

New seedling progenies (first field generation 1997) were sown and transplanted to the field at Grand Rapids, MN. Of the 35,000 seedlings transplanted, 10,000 from 206 hybrid families were selected and will be planted at Crookston, MN as 4-hill plots (second field generation) in 1998. Traditionally, selection intensity among the first year seedling progenies is mild due to being planted from transplants and having an 80-90 day growing season. The Crookston environment is severe in that it is characterized by heavy clay soils, is non-irrigated, and water drains slowly; which, tends to result in tubers exhibiting malformation and/or other defects. The selection intensity at Crookston is high; approximately 250-500 clones will be advanced. In 1997 at Crookston, 254 clones were selected for advancement from approximately 32,000 4-hill plots.

New hybrid families are being generated in our winter 1998 crossing program. Emphasis is being placed on:

- 1) Developing high yielding, high quality fresh and processing reds (30%), longs (25%), and round whites (45%).
- 2) Broadening the genetic base of our parent population by using clones sourced nationally and internationally.
- 3) Evaluating and introgressing wild species germplasm for resistance to CPB, late blight, verticillium wilt, common scab, silver scurf, and cold-sweetening.

Intermediate Generations

Four hundred ninety four clones were evaluated at four locations, Becker, Crookston, Grand Rapids, and Grand Forks. This population can be partitioned into two groups 1) older, and 2) newer selections. The older selections (146 clones) were planted in 2 replications of 20-hill plots, while the newer selections (348 clones) were planted as non-replicated 20-hill plots.

Testing is continuing for total yield, US#1 yield, specific gravity, processing traits, agronomic and horticultural characteristics, and disease resistance. Several clones have shown moderate resistance to common scab, and verticillium wilt; none showed resistance to late blight. We expect that about one-third of these selections will be retained.

Preliminary Advanced Seedling Trials (Preliminary Replicated Trials)

Twenty-three clones were evaluated in Preliminary Replicated Trials at 3 locations, Becker (Table 1), Crookston (Table 2), and Grand Forks (Table 3). Single-row plots were planted in a Randomized Complete Block Design (RCBD) with 2 replications of 20 hills. Seed piece spacing was 12" within row and 36" between rows. Standard crop management practices were used.

Reds

Fourteen Minnesota seedling selections were compared to varieties Dark Red Norland, and Red Pontiac (Tables 1 to 4). Desired characteristics include early and late maturity, bright red colored skin that lacks fading, good skin set, and high yield. Yields tended to be highest at Becker and ranged from 239 – 677 total cwt/A. Yields were lowest at Grand Forks (21 - 152 total cwt/A). These results

can be expected; growing conditions at Grand Forks were unfavorably wet and Becker was excellent.

Twelve Minnesota seedlings at Becker, eleven at Crookston, and five at Grand Forks yielded higher than Dark Red Norland. Minnesota seedlings MN 17993, MN18370, MN18768, and MN18808 had favorable yields, good appearance ratings, and low incidence of tuber defects across the three locations. Moreover, they tended to have twice the yield of Dark Red Norland at Grand Forks.

Russet / Long

Four Minnesota seedling selections were evaluated (Tables 1 to 4). Yields were highest at Becker and lowest at Grand Forks. The seedlings performed differently across locations and specific gravity and tuber appearance are concerns. Selection NM 18710 had high yields and favorable appearance ratings, but low specific gravity. This clone will be evaluated for fresh market potential.

Round Whites

Two Minnesota seedlings were compared to Norchip (Tables 1 to 4). Though the yields at Becker were favorably high, none will be continued due to lacking desirable tuber type.

Advanced Seedling Trials (Replicated Yield Trials)

Twenty-nine clones were evaluated in Replicated Yield Trials in five environments. Single-row plots were planted in a Randomized Complete Block Design (RCBD) with 2 replications of 20 hills. One location, Becker, Minnesota had two harvest dates, an early (Table 5, 111 days) and a late (Table 6, 146 days). The other locations were Grand Forks (Table 7), Hollandale (Table 8), and Long Prairie (Table 9). Seed piece spacing was 12" within row and 36" between rows. Standard crop management practices were used.

Reds

Eight Minnesota and one Colorado seedling selections were compared to check varieties Dark Red Norland, Red LaSoda, and Red Pontiac (Tables 5 – 10). Yields tended to be highest at Becker (late) and Long Prairie, intermediate at Becker (early) and Hollandale, and lowest at Grand Forks. Two Minnesota seedlings MN 17922 (250 cwt/A) and MN

18365 (257 cwt/A) yielded comparable to Dark Red Norland (257 cwt/A) at the early Becker harvest and all nine seedlings were higher yielding than Dark Red Norland at the Becker late harvest. CO86218-2 had deep dark red skin color and was very attractive at Becker (late). Minnesota seedlings MN 17572, MN 17922, and MN 18365 had exceptional performance across locations.

Russet / Long

Two Minnesota seedlings were compared to Goldrush, Russet Burbank, and Russet Norkotah (Tables 5 – 10). Both MN 16478 and MN 18142 performed well at all locations with higher yields than cultivars at all but one location. Tuber appearance ratings are high and MN 16478 tends to be blockier in shape. Vascular discoloration seems to be one limiting internal quality.

Round Whites

Six Minnesota seedlings and one Colorado selection of a Beltsville seedling were compared to Atlantic, Itasca, Latona, and Norchip (Tables 5 – 10). Yields were generally as high or greater than Atlantic and Norchip. The incidence of internal defects, in general was high, but comparable to Atlantic. The specific gravity of these clones may not be high enough for efficient chip processing.

North Central Regional Potato Variety Trial

North Central breeding programs have developed many of the most widely grown varieties in the US. These account for 5 of the top 10 leading varieties and cover the breadth of market types: fresh and processing russets, reds, and round-white chippers. Our regional meeting (NCR-84) plays an important role in this success by providing a forum for collaborative research, regional varietal testing, and by facilitating exchange of germplasm and research ideas.

As part of this cooperative effort North Central potato breeders enter their most advanced seedling selections in regional trials located at eight US and two Canadian locations. Minnesota's potato breeding program entered three clones MN 16180, MN 16489, and MN16966 in 1997. Results from this trial at Becker are presented (Table 11). The three Minnesota selections were the highest yielding clones in the round white market class. Specific gravity was low and internal defects equal or lower than Atlantic,

Norchip, or Snowden. Maturity is medium-late and overall appearance ratings were favorable. Across all locations MN 16966 and MN 16489 were 1st and 2nd, respectively for total yield and MN 16489 and MN 16180 ranked 1st and 4th, respectively for general merit.

In 1998, four Minnesota clones will be entered; MN 16478, russet; MN 16966, light russet; MN 17572, red; and MN 17922, red.

Disease Screening

Scab

Each year Minnesota selections, germplasm used for special characteristics in breeding, and cultivars are assessed for resistance to common scab at Becker and Grand Rapids. Clones are evaluated for scab lesion type (0 = no scab to 5 = deep pitted scab), and scab coverage (T = trace to H = heavy). Presented in Table 12 are the scab evaluations of the 438 clones entered at Becker in 1997. Many of our promising selections are moderately resistant.

Late Blight

In 1997 our late blight trial was conducted at Rosemount. More than 500 Minnesota seedlings were evaluated in un-replicated plots, while advanced seedlings and cultivars from other US breeding programs and European varieties were evaluated from a replicated trial. The trial was planted June 9 and inoculated August 14 with the A2, US8 genotype. Foliar readings were done on weekly intervals from August 25 to September 17. A summary of the results from European varieties and clones from other US breeding programs are presented (Table 13). None of the Minnesota material showed resistance to late blight. Clones Awn 86514-2, B0692-4, B0718-3, and B767-2 had the highest levels of foliar resistance.

Verticillium Wilt

In 1997 our verticillium wilt resistance evaluations were conducted at Grand Forks. Minnesota selections and other breeding germplasm are evaluated for resistance to *V. dahliae* (Table 14a) and *V. albo-atrum* (Table 14b). Resistant selections have been identified and are being used in breeding. Germplasm showing field resistance are being evaluated in the laboratory for resistance using an assay to quantify vascular colonization.

Potato Leafhopper Resistance

Twenty-nine wild *Solanum* species (116 accessions) were screened for resistance to potato leafhopper at the University of Minnesota Agricultural Experiment Station, Rosemount. To facilitate subsequent utilization as breeding material, emphasis was placed on screening potato germplasm having good tuberization potential and known to be capable of producing 2n pollen. Two sources were identified: 1) twenty accessions representing 10 wild species identified as being capable of producing 2n gametes; and 2) accessions from species with dense trichomes which also possess good tuberization characteristics when introgressed into existing cultivars. Additional accessions possessing a range of leaf hair or trichome length and density were chosen from species data provided by Dr. David Spooner (University of Wisconsin). Plants were also screened for resistance to Colorado potato beetle and plant vigor. Several

species combined plant vigor and resistance to potato leafhopper and Colorado potato beetle (Table 15), e.g., *S. agrinionifolium*, *S. berthaultii*, *S. candolleanum*, *S. chacoense*, *S. kurtzianum* and *S. pampasense*. Germplasm having good tuberization potential and known to be capable of producing 2n pollen, e.g., *S. canasense*, *S. gourlayi*, *S. vernei*, and *S. verrucosum* had one-third to one-half as many potato leafhoppers as Russet Burbank

Acknowledgements

Research supported by the University of Minnesota; College of Agricultural, Food, and Environmental Sciences, Minnesota Agricultural Experiment Station, Red River Valley Potato Growers Association, and Minnesota Area II Potato Research and Promotion Council.

Minnesota Table 1. - Performance of Preliminary Advanced Seedlings (Preliminary Replicated Trial) of Minnesota Selections and Cultivars at Becker, Minnesota¹ in 1997.

Clone	Plant Growth ²			Tuber Characteristics ³					Tuber Quality ⁴					Cwt/A		% of Total ⁵		Sp. Gr.	Comments
	Vigor	Maternity	Shape	Size	Set	Shape	Unif.	Skin	App.	HH	VD	IN	Total Defects	US#1	Total	A's	B's		
REDS																			
17923	8	38	3	m-Lg	3.5	4.5	4	4.5	4	1	0	0	1	337.1	398.8	84.5	15.5	1054	pink, deep eyes, lumpy
17925	8.5	3.5	3.5	Lg	4.5	3.5	5	4	4.5	1	0	2	3	431.4	464.0	93.0	7.0	1056	rough, purple
17941	7	23	4.5	Lg	5	6	5.5	5	5.5	0	0	0	0	424.1	467.6	90.7	9.3	1059	pink, blocky shape
17993	8	3	3	Lg	6	5.5	5.5	5	5.5	0	2	0	2	445.9	478.5	93.2	6.8	1064	
18364	7.5	38	2	m	6	6	5.5	5	4.5	0	0	0	0	217.5	337.1	64.5	35.5	1062	too small
18370	7	3	4	Lg	5	6.5	5.5	5.5	5.5	0	0	1	1	478.5	507.5	94.3	5.7	1062	oval shape, smooth, pink
18750	7	38	3	Lg-m	4.5	4.5	5	5	5	0	1	0	1	268.3	319.0	84.1	15.9	1066	pink
18757	7	4	4	m	4	5	4.5	5.5	4.5	0	6	4	10	181.3	268.3	67.6	32.4	1064	few, pink eyes, long shape, red fades
18758	7.5	28	4	m	4.5	5	5	5	5	1	0	0	1	326.3	377.0	86.5	13.5	1063	smooth, pink
18768	9	3	3.5	m	5	6	5.5	6	5	0	0	0	0	489.4	601.8	81.3	18.7	1063	smooth, oval shape
18769	6	28	2.5	Lg-m	3.5	4.5	4.5	5.5	4.5	0	0	0	0	206.6	239.3	86.4	13.6	1047	few
18772	7	3.5	3.5	Lg	4.5	7	7	6	6	1	0	2	3	377.0	409.6	92.0	8.0	1054	blocky shape
18773	8	3.5	3	Lg-m	4.5	4	4	5	4	6	0	0	6	264.6	358.9	73.7	26.3	1075	deep eyes
18808	8	33	4	Lg	6.5	6	6	5.5	6	1	0	1	2	601.8	652.5	92.2	7.8	1064	oval shape, pink
D R. Norland	7.5	23	3	Lg	4.5	4.5	5	5	4.5	1	0	1	2	268.3	293.6	91.4	8.6	1050	pink
Red Pontiac	8	43	3.5	Lg	5.5	4	5.5	5.5	3.5	3	0	4	7	616.3	677.9	90.9	9.1	1062	deep eyes, pink
RUSSET																			
18153	8.5	43	6	Lg	3.5	6	4.5	5	5	2	0	0	2	366.1	406.0	90.2	9.8	1062	blocky shape
18710	8.5	33	7	Lg	5	5.5	6.5	6	6	3	0	0	3	590.9	616.3	95.9	4.1	1072	consumer potential
18713	8	3.5	6.5	Lg	5	6	6	7	6	0	2	0	2	460.4	496.6	92.7	7.3	1080	
18714	8.5	40	6	Lg	5	4	5	5.5	5	2	0	0	2	522.0	547.4	95.4	4.6	1069	slightly rough
WHITES																			
18468	8	38	4	Lg	5	5	5	5	5	0	0	1	1	572.8	598.1	95.8	4.2	1067	rough, lumpy
18653	8	50	3.5	Lg	5	4	5	5	4	3	4	0	7	467.6	543.8	86.0	14.0	1083	rough, off type
Norchip	8	3.5	2	m-Lg	4.5	5.5	4.5	4.5	4	0	0	0	1	362.5	413.3	87.7	12.3	1070	too small
Location																			
Late - Becker, MN (146 days)																			
2Plant Growth																			
3Tuber Characteristics																			
4Quality (10+ Tubers cut)																			
5Tuber Size																			
HH - Hollow Heart																			
VD - Vascular Discoloration																			
IN - Internal Necrosis																			
Shape - 1 (round) - 9 (long)																			
Set - 1 (poor) - 9 (excellent)																			
Shape Uniformity - 1 (poor) - 9 (excellent)																			
Size Uniformity - 1 (poor) - 9 (excellent)																			
Skin Maturity - 1 (poor) - 9 (excellent)																			
Appearance - 1 (poor) - 9 (excellent)																			

¹ Location	² Plant Growth	³ Tuber Characteristics	⁴ Quality (10+ Tubers cut)	⁵ Tuber Size
Late - Becker, MN (146 days)	Vigor - 1 (poor) - 9 (vigorous) Maturity - 1 (early) - 5 (late)	Shape - 1 (round) - 9 (long) Set - 1 (poor) - 9 (excellent) Shape Uniformity - 1 (poor) - 9 (excellent) Size Uniformity - 1 (poor) - 9 (excellent) Skin Maturity - 1 (poor) - 9 (excellent) Appearance - 1 (poor) - 9 (excellent)	HH - Hollow Heart VD - Vascular Discoloration IN - Internal Necrosis	B < 2" A > 2"

Minnesota Table 2. Performance of Preliminary Advanced Seedlings (Preliminary Replicated Trial) of Minnesota Selections and Cultivars at Crookston, Minnesota¹ in 1997.

Clone	Plant Growth ²		Tuber Characteristics ³					Tuber Quality ⁴				Cwt/A				
	Vigor	Maturity	Shape	Size	Set	Shape		Skin	App.	HH	VD	IN	Total Defects	Sp. Gr.	Comments	
						Unif.	Unif.									Maturity
REDS																
17923	4.5	3.5	4	Lg	5.5	4	5	6	4.5	0	4	0	4	199.4	1.077	lumpy, blocky shape, light set
17925	3	2	4	Lg	3	3	5	2.5	3.5	1	0	0	1	114.2	1.079	bright red, blocky shape, is lumpy
17941	4	2	3.5	s-m	4	3	4	5.5	2.5	0	3	0	3	134.1	1.063	points, pear, poor skin, small, lumpy
17993	4.5	3.5	3	m	6	5.5	6	7	5.5	0	2	1	3	170.4	1.064	flat shape
18364	4.5	2.5	2.5	m	4	5.5	5.5	5.5	4.5	0	0	0	0	139.6	1.078	smooth, small, very small, few
18370	5	3	3.5	m-Lg	5.5	5	5.5	7	5.5	1	4	0	5	174.0	1.078	rough and lumpy
18750	3	2	2.5	Lg	2	3	4	5	3	0	8	0	8	76.1	1.075	lumpy, small
18757	4.5	2.5	3.5	m	5.5	5	5.5	5.5	4	0	6	0	6	159.5	1.089	lg shp. maybe too long, lots here
18758	4.5	3	2.5	Lg-m	4	5.5	6	7	6	0	8	0	8	161.3	1.087	oval
18768	3.5	2	4	Lg	3.5	3.5	4	4.5	4	0	3	2	5	101.5	1.064	long, light red
18769	4	1	2	m	2.5	5	5	6	4	0	0	0	0	81.6	1.073	few, small here
18772	3	3.5	4	Lg	3	4.5	6	5	5	0	6	0	6	152.3	1.068	lumpy, blocky shape, gr cr.
18773	4	4.5	4	Lg	3	3.5	4.5	2.5	4	6	2	3	11	145.0	1.082	blocky shape, lumpy, large
18808	4	3.5	3.5	m-Lg	3.5	3.5	4.5	4.5	4	0	4	1	5	132.3	1.073	lumpy, growth cracks
D.R. Norland	4.5	2.5	2.5	m	3	6	5.5	4.5	3	0	6	1	7	106.9	1.073	very poor skin
Red Pontiac	4	5.0	3.5	Lg	3.5	2.5	3.5	4	2.5	4	4	0	8	145.0	1.075	very rough
RUSSET																
18153	4.5	4.5	5	m	3.5	4	5	7	4	1	14	0	15	139.6	1.089	blocky shape, gr cr, gels round
18710	5	4.0	5.5	Lg	6	4.5	5.5	6	5	2	4	0	6	177.6	1.081	lumpy, rough
18713	5	4.0	5	m	4	5	5.5	8	4.5	0	8	0	8	175.8	1.095	tough skin
18714	5.5	4.0	4.5	m	5.5	5.5	6	6.5	5.5	1	10	0	11	210.3	1.083	blocky shape, tough skin, light set
WHITES																
18468	4.5	4.0	4.5	Lg	3.5	3.5	4.5	4.5	5	5	0	0	5	116.0	1.077	blocky shape, too lumpy
18653	7	2.5	4	m	4	3	4	7	3	0	15	0	15	148.6	1.090	lumpy, yellow flesh
Norcho	5.5	3.0	2	m	4.5	4.5	4.5	4.5	3.5	0	5	0	5	157.7	1.087	small

Location	Plant Growth	³ Tuber Characteristics	⁴ Quality (10+ Tubers cut)
Crookston, MN (104 days)	Vigor - 1 (poor) - 9 (vigorous) Maturity - 1 (early) - 5 (late)	Shape - 1 (round) - 9 (long) Set - 1 (poor) - 9 (excellent) Shape Uniformity - 1 (poor) - 9 (excellent) Size Uniformity - 1 (poor) - 9 (excellent) Skin Maturity - 1 (poor) - 9 (excellent) Appearance - 1 (poor) - 9 (excellent)	HH - Hollow Heart VD - Vascular Discoloration IN - Internal Necrosis

Minnesota Table 3. Performance of Preliminary Advanced Seedlings (Preliminary Replicated Trial) of Minnesota Selections and Cultivars at Grand Forks, North Dakota¹ in 1997.

Cone	Tuber Characteristics ²										Cw/A	
	Shape	Size	Set	Shape	Size	Skin	App.	HH	VD	IN	Total Defects	Total
Comments												
REDS												
17923	2	s	3.5	6	6	5	4.5	0	0	0	0	68.9
17925	3	s	2	4.5	3.5	3	2.5	0	0	0	0	50.8
17941	3.5	s	3	6	6	5.5	3.5	0	0	0	0	54.4
17993	3	Lg	4.5	5.5	6	4	6	0	0	0	0	152.3
18364	3		6	6	6	3	6	0	0	0	0	61.6
18370	3	m	4	6	6	4.5	6	0	0	0	0	105.1
18750	2		2	6	5	4	2	0	0	0	0	21.8
18757	4.5	s	2.5	2	3	1	1.5	0	0	0	0	61.6
18758	4	m	3	5.5	5.5	5.5	4.5	0	0	2	2	72.5
18768	3	s	3	3.5	4.5	4.5	2.5	0	0	1	1	101.5
18769	2.5	s	2.5	6.5	6.5	7	3	0	0	0	0	36.3
18772	3.5	s	3.5	4.5	4.5	4	3.5	0	0	0	0	43.5
18773	2	s	4	5.5	6	4.5	4	0	0	0	0	65.3
18808	3.5	m	5	5	4.5	3.5	4.5	0	0	0	0	90.6
D R. Norland	3	s	3.5	6	5.5	5	5.5	1	0	0	1	68.9
Red Pontiac	3	m	2.5	4	5.5	3.5	2.5	0	0	0	0	47.1
RUSSET												
18153	5.5	m	3	4.5	5	6	5.5	0	0	0	0	68.9
18710	4	s	4	6	5	5.5	4	0	0	0	0	87.0
18713	5.5	s	3.5	6	6	5.5	3.5	0	0	0	0	90.6
18714	5	s	2.5	4.5	5	4.5	3	0	0	0	0	43.5
WHITES												
18468	4	m	3	3.5	4	3	2.5	0	0	2	2	94.3
18653	2	s	3	6	5.5	3	2.5	0	0	0	0	50.8
Norchip	2.5	m	3.5	3.5	6	4	3.5	0	0	0	0	76.1
³ Quality (10+ Tubers cut)												
¹ Location												
Grand Forks, ND (98 days)												
Shape - 1 (round) - 9 (long)												
Set - 1 (poor) - 9 (excellent)												
Shape Uniformity - 1 (poor) - 9 (excellent)												
Size Uniformity - 1 (poor) - 9 (excellent)												
Skin Maturity - 1 (poor) - 9 (excellent)												
Appearance - 1 (poor) - 9 (excellent)												
HH - Hollow Heart												
VD - Vascular Discoloration												
IN - Internal Necrosis												

Minnesota Table 4. Mean Performance of Preliminary Advanced Seedlings (Preliminary Replicated Trial) of Minnesota Selections and Cultivars at Two Minnesota and One North Dakota Locations¹ in 1997.

Clone	Plant Growth ²		Tuber Characteristics ³							Tuber Quality ⁴				Cw/A			
	Vigor	Maturity	Shape	Size	Set	Shape	Size	Skin	App.	HH	VD	IN	Total Defects		Total	Sp. Gr.	Comments
REDs																	
17923	6.3	3.6	3.0	m-Lg	4.2	4.8	5.0	5.2	4.3	0.3	1.3	0.0	1.7	222.3	1.066	pink, deep eyes, lumpy	
17925	5.8	2.8	3.5	Lg	3.2	3.7	4.5	3.2	3.5	0.7	0.0	0.7	1.3	209.6	1.068	rough, purple	
17941	5.5	2.1	3.8	Lg	4.0	5.0	5.2	5.3	3.8	0.0	1.0	0.0	1.0	218.7	1.071	pink, blocky shape	
17993	6.3	3.3	3.0	Lg	5.5	5.5	5.8	5.3	5.7	0.0	1.3	0.3	1.7	267.0	1.074		
18364	6.0	3.1	2.5	m	5.3	5.8	5.7	4.5	5.0	0.0	0.0	0.0	0.0	179.4	1.070	too small	
18370	6.0	3.0	3.5	Lg	4.8	5.8	5.7	5.7	5.7	0.3	1.3	0.3	2.0	262.2	1.070	oval shape, smooth, pink	
18750	5.0	2.9	2.5	Lg-m	2.8	4.5	4.7	4.7	3.3	0.0	3.0	0.0	3.0	139.0	1.071	pink	
18757	5.8	3.3	4.0	m	4.0	4.0	4.3	4.0	3.3	0.0	4.0	1.3	5.3	163.1	1.077	few, pink eyes, long shape, red fades	
18758	6.0	2.9	3.5	m	3.8	5.3	5.5	5.8	5.2	0.3	2.7	0.7	3.7	203.6	1.075	smooth, pink	
18768	6.3	2.5	3.5	m	3.8	4.3	4.7	5.0	3.8	0.0	1.0	1.0	2.0	268.3	1.064	smooth, oval shape	
18769	5.0	1.9	2.3	Lg-m	2.8	5.3	5.3	6.2	3.8	0.0	0.0	0.0	0.0	119.0	1.060	few	
18772	5.0	3.5	3.7	Lg	3.7	5.3	5.8	5.0	4.8	0.3	2.0	0.7	3.0	201.8	1.061	blocky shape	
18773	6.0	4.0	3.0	Lg-m	3.8	4.3	4.8	4.0	4.0	4.0	0.7	1.0	5.7	189.7	1.079	deep eyes	
18808	6.0	3.4	3.7	Lg	5.0	4.8	5.0	4.5	4.8	0.3	1.3	0.7	2.3	291.8	1.069	oval shape, pink	
D.R. Norland	6.0	2.4	2.8	Lg	3.7	5.5	5.3	4.8	4.3	0.7	2.0	0.7	3.3	156.5	1.062	pink	
Red Pontiac	6.0	4.6	3.3	Lg	3.8	3.5	4.8	4.3	2.8	2.3	1.3	1.3	5.0	290.0	1.069	deep eyes, pink	
RUSSET																	
18153	6.5	4.4	5.5	Lg	3.3	4.8	4.8	6.0	4.8	1.0	4.7	0.0	5.7	204.8	1.076	blocky shape	
18710	6.8	3.6	5.5	Lg	5.0	5.3	5.7	5.8	5.0	1.7	1.3	0.0	3.0	293.6	1.077	consumer potential	
18713	6.5	3.8	5.7	Lg	4.2	5.7	5.8	6.8	4.7	0.0	3.3	0.0	3.3	254.4	1.088	tough skin	
18714	7.0	4.0	5.2	Lg	4.3	4.7	5.3	5.5	4.5	1.0	3.3	0.0	4.3	267.0	1.076	slightly rough	
WHITES																	
18468	6.3	3.9	4.2	Lg	3.8	4.0	4.5	4.2	4.2	1.7	0.0	1.0	2.7	269.5	1.072	rough, lumpy	
18653	7.5	3.8	3.2	Lg	4.0	4.3	4.8	5.0	3.2	1.0	6.3	0.0	7.3	247.7	1.087	rough, off type	
Norchip	6.8	3.3	2.2	m-Lg	4.2	4.5	5.0	4.3	3.7	0.0	1.7	0.0	2.0	215.7	1.079	too small	
¹ Locations																	
² Plant Growth																	
³ Tuber Characteristics																	
⁴ Quality (10= Tubers cut)																	
HH - Hollow Heart																	
VD - Vascular Discoloration																	
IN - Internal Necrosis																	
Shape - 1 (round) - 9 (long)																	
Set - 1 (poor) - 9 (excellent)																	
Shape Uniformity - 1 (poor) - 9 (excellent)																	
Size Uniformity - 1 (poor) - 9 (excellent)																	
Skin Maturity - 1 (poor) - 9 (excellent)																	
Appearance - 1 (poor) - 9 (excellent)																	
Late - Becker, MN (146 days).																	
Grand Forks, ND (99 days).																	
Crookston, MN (104 days).																	

Locations

Minnesota Table 5. Performance of Advanced Seedlings (Replicated Yield Trial) of Minnesota Selections and Cultivars at Becker, Minnesota¹ Early Harvest in 1997.

Growth ²		Tuber Characteristics ³					Tuber Quality ⁴				Cwt/A		% of Total ⁵		Sp. Gr.	Comments	
Clone	Vigor	Shape	Size	Set	Skin Maturity	App.	HH	VD	IN	Defects	US#1	Total	A's	B's			
REDS																	
17572	5	3	m-Lg	6	8	6	5	0	0	5	155.9	184.9	84.3	15.7	1.048	deep red, good skin, excellent skin, uniform shape	
17578	6	3.5	Lg-m	3.5	6	4	5	0	0	5	148.6	170.4	87.2	12.8	1.054	light red, rough, big, blocky	
17922	7.5	2	m-s	6	5	6	1	0	0	1	203.0	250.1	81.2	18.8	1.049	small, excellent color, large set, some gr cr, round shape	
17986	8	4.5	s-m	4	4.5	4.5	0	0	0	0	134.1	195.8	68.5	31.5	1.053	long shape, small, long	
17989	7.5	4	s	4	5.5	4	1	0	0	1	58.0	105.1	55.2	44.8	1.053	stolons	
17999	7	2.5	s-m	4.5	4	4	0	0	0	0	90.6	155.9	58.1	41.9	1.052	lots of small, very small	
18049	8	4	m	4.5	7	4.5	2	0	0	2	181.3	199.4	90.9	9.1	1.058		
18365	7	3.5	m-Lg	5.5	5	6.5	5	0	0	5	224.8	257.4	87.3	12.7	1.052	nice, smooth	
CO86218-2	7	2	s-m	4	6	4.5	0	0	0	0	105.1	148.6	70.7	29.3	1.049	small, deep red, stolons, sticky	
DR Norland	6.5	3	Lg-m	5	4.5	5	1	0	0	1	228.4	257.4	88.7	11.3	1.056	good color, round shape	
Red La Soda	7	3.5	Lg-s	4	4	4.5	7	0	0	7	170.4	195.8	87.0	13.0	1.052	blocky, rough	
Red Pontiac	7.5	3.5	m-Lg	3.5	4	2.5	9	0	0	9	134.1	174.0	77.1	22.9	1.046	rough, deep ends, bright, big, blocky, some rough	
RUSSEI																	
16478	8.5	5.5	m-Lg	6	4.5	6	1	0	0	1	221.1	239.3	92.42	7.6	1.069	long & blocky, blocky, oval, med set	
18142	8	7	Lg	5	7.5	7	2	0	0	2	192.1	203.0	94.64	5.4	1.056	uniform shape, nice, big, blocky, oval	
Goldrush	7.5	7	Lg-m	5	5	6	1	0	0	1	177.6	199.4	89.09	10.9	1.056	blocky, long	
R Burbank	6.5	7	s	4	5	4	0	0	0	0	112.4	174.0	64.58	35.4	1.061	very small	
R Nokolah	8	7	Lg-ov	6	6	7	4	0	0	4	210.3	235.6	89.23	10.8	1.062	blocky, long, good skin	
WHITES																	
12823	7.5	2	s-m	3	3	3.5	6	0	0	6	116	188.5	61.5	38.5	1.062	some rough, second growth	
15129	8	4	m-Lg	6.5	5.5	5.5	2	0	0	2	442.3	500.3	88.4	11.6	1.055	longer, large gel long, attractive	
16180	7	2.5	Lg	7	6	7.5	6	0	0	6	536.5	609.0	88.1	11.9	1.062	smooth, attractive, blocky, oval	
16489	8.5	3.5	m-s	5	6	5	2	0	0	2	340.8	384.3	88.7	11.3	1.062	oval, blocky, pink eyes, points	
16966	7.5	2	s-m	5.5	4.5	4	1	0	0	1	427.8	507.5	84.3	15.7	1.062	too small, uniform shape, stolons	
17662	6.5	3.5	Lg-m	6	5	6	0	0	0	0	580.0	652.5	88.9	11.1	1.060	blocky, nice here	
Atlantic	8.5	3	Lg-m	5	5.5	4	13	0	0	13	377.0	427.8	88.1	11.9	1.071	deep eyes, end folds	
BC0894-2	6.5	3.5	m-Lg	5	5.5	5.5	4	0	0	4	311.8	384.3	81.1	18.9	1.058	uniform shape, nice here, smooth	
Itasca	8	3.5	Lg-m	4.5	4.5	5	1	0	0	1	384.3	427.8	89.8	10.2	1.059		
Latona	7.5	3	m-Lg	5.5	6.5	4.5	3	0	0	3	340.8	449.5	75.8	24.2	1.059	scab, tends too long, lots of stolons	
Norchip	8	3	s	5	6	6	3	0	0	3	507.5	536.5	94.6	5.4	1.065	some rough	
Footnotes																	
¹ Location																	
Early - Becker, MN (111 days)																	
Shape - 1 (round) - 9 (long)																	
Set - 1 (poor) - 9 (excellent)																	
Skin Maturity - 1 (poor) - 9 (excellent)																	
Appearance - 1 (poor) - 9 (excellent)																	
² Plant Growth																	
Vigor - 1 (poor) - 9 (vigorous)																	

Minnesota Table 6. Performance of Advanced Seedlings (Replicated Yield Trial) of Minnesota Selections and Cultivars at Becker, Minnesota¹ Late Harvest in 1997.

Plant Growth ²		Tuber Characteristics ³							Tuber Quality ⁴				Cwt/A		% of Total ⁵		Sp. Gr.	Comments	
Vigor	Maturity	Shape	Size	Set	Unif.	Shape	Size	Skin	App	HH	VD	IN	Total Defects	US#1	Total	A's			B's
REDS																			
7	3	3	m	5	5	5	5.5	5.5	5.5	0	0	0	0	420.5	478.5	87.9	12.1	1.051	oval shape, oval shape, poor color
8	3.25	5.5	Lg	4.5	5	5	5	5	5	0	1	1	2	420.5	445.9	94.3	5.7	1.057	pink
8.5	3.25	3	Lg	5.5	5.5	5.5	5.5	5	5	0	0	0	0	540.1	572.8	94.3	5.7	1.064	blocky
8.5	3.5	3.5	Lg	6.5	6	5.5	5.5	5	5.5	0	1	0	1	496.6	543.8	91.3	8.7	1.064	too long, smooth, oval shape, maybe too long
7.5	4	4	Lg	5	6	6	6	5.5	6	0	0	0	0	355.3	398.8	89.1	10.9	1.074	attractive
6.5	3.75	2.5	Lg	5.5	5	5	5	2	4	0	0	0	0	333.5	435.0	76.7	23.3	1.058	skin scabs, pink
8	2.25	4	Ov-Lg	4.5	4	4.5	4.5	3.5	5	0	0	0	0	427.8	464.0	92.2	7.8	1.064	
8	2	3	Lg	5	7	6.5	6	6	6	0	0	1	1	290.0	373.4	77.7	22.3	1.054	oval shape, smooth
7.5	3.75	2	Lg-m	5	7	7	7	8.5	7.5	0	0	1	2	344.4	460.4	74.8	25.2	1.068	very attractive
8	1.75	3	Lg	4	5.5	5	5	5.5	5	2	0	0	2	304.5	329.9	92.3	7.7	1.052	color
8	2.25	4	Lg	4	4	6	6	5	5	0	1	3	4	406.0	438.6	92.6	7.4	1.058	deep eyes, poor color, scabs, blocky shape
8.5	3.5	2	Lg	5.5	4.5	5.5	5.5	5	5	1	0	2	3	576.4	601.8	95.8	4.2	1.064	deep eyes, rough
RUSSET																			
9	3.25	3.5	Lg	4.5	5.5	5.5	6	5.5	5.5	0	2	0	2	435.0	456.7	95.2	4.8	1.087	blocky shape, too blocky for russett
8	2.25	6.5	Lg	5	6	6	6	7	6	0	1	1	2	406.9	427.7	94.9	5.1	1.061	thick skin
8	2.75	7	Lg	4	5	6	6	5.5	6.5	0	0	0	0	362.5	391.5	92.6	7.4	1.057	
7.5	4	4.5	Lg	3.5	2.5	3	3.5	3.5	2.5	1	2	1	4	297.3	398.8	74.5	25.5	1.084	rough, off shape, rough
8	2.75	7	Lg	4	7	6.5	7	7	7	1	0	1	2	395.1	420.5	94.0	6.0	1.069	blocky shape
WHITES																			
8	4.25	3	Lg-m	4.5	4	5	5	4.5	4.5	0	0	5	5	380.6	427.8	89.0	11.0	1.079	
8	3	3	Lg	5	4.5	5	5	5.5	5	2	0	0	2	460.4	489.4	94.1	5.9	1.059	lumpy
8	2.75	4.5	Lg	5.5	5	5	5	5	5	7	3	0	10	464.0	511.1	90.8	9.2	1.063	too long, lumpy
8	2.75	3	Lg	5	4.5	4.5	4.5	5	4	0	0	0	0	478.5	518.4	92.3	7.7	1.077	off type
8	4	3	m-Lg	5.5	4	5.5	5.5	5.5	4.5	0	0	4	4	460.4	532.9	86.4	13.6	1.074	lumpy
8	3	3	Lg	5.5	6.5	6	6	6	6.5	0	0	0	0	460.4	507.5	90.7	9.3	1.067	oval shape
8	3.5	2.5	Lg	4	5.5	5.5	5.5	5.5	5.5	5	2	0	10	395.1	431.4	91.6	8.4	1.083	light set, scab
7	3.25	2.5	Lg-m	4	7	6.5	6	6	6.5	0	0	0	0	261.0	304.5	85.7	14.3	1.061	few
8.5	2.75	3.5	Lg	5.5	5.5	6	6	5.5	6	0	2	0	2	590.9	630.8	93.7	6.3	1.072	rough
8	4.25	3	Lg	6	5	5	5	5	4.5	2	2	1	5	543.8	609.0	89.3	10.7	1.080	off type, rot
7.5	3	3	Lg	3.5	5	5	4.5	5	5	0	2	6	8	326.3	351.6	92.8	7.2	1.077	blocky shape
<div><div>¹Location</div><div><div><div><div>²Plant Growth</div><div><div><div><div>³Tuber Characteristics</div><div><div><div><div>⁴Quality (10+ Tubers cut)</div><div><div><div><div>⁵Tuber Size</div></div></div></div></div></div></div></div></div></div></div></div></div></div>																			
Late - Becker, MN (146 days)																			
Vigor - 1 (poor) - 9 (vigorous)																			
Maturity - 1 (early) - 5 (late)																			
Shape - 1 (round) - 9 (long)																			
Set - 1 (poor) - 9 (excellent)																			
Shape Uniformity - 1 (poor) - 9 (excellent)																			
Size Uniformity - 1 (poor) - 9 (excellent)																			
Skin Maturity - 1 (poor) - 9 (excellent)																			
Appearance - 1 (poor) - 9 (excellent)																			

Minnesota Table 7. Performance of Advanced Seedlings (Replicated Yield Trial) of Minnesota Selections and Cultivars at Grand Forks, North Dakota¹ in 1997.

Tuber Characteristics ²										Tuber Quality ³				Cwt/A		% of Total ⁴		Sp. Gr.	Comments
Clone	Shape	Size	Set	Shape Unif.	Size Unif.	Skin Maturity	App.	HH	VD	IN	Total Defects	US#1	Total	A's	B's				
REDS																			
17572	2	s	6.5	5.5	5.5	3.5	5	0	1	1	2	83.4	141.4	59.0	41.0	1070	small		
17578	2	s	4	5.5	3	3	2.5	0	0	0	0	50.8	90.6	56.0	44.0	1079			
17922	2	s	3.5	4.5	5.5	2	4	0	1	1	2	63.4	87.0	72.9	27.1	1074			
17986	2	s	3	4	4.5	3	3	0	1	0	1	38.1	54.4	70.0	30.0	1074	small		
17989	2.5	s	3	3.5	4	1.5	3	0	1	0	1	25.4	48.9	51.9	48.1	1072			
17999	2.5	s	3.5	4	3	2	2	0	2	0	2	16.3	41.7	39.1	60.9	1067			
18049	2	s	3	4	4	3	3	0	0	0	0	38.1	56.2	67.7	32.3	1072			
18365	2	s	4.5	5.5	5.5	6	4.5	0	12	2	14	56.2	96.1	58.5	41.5	1067			
CO86218-2	2	s	2.5	4.5	4.5	7	3.5	0	0	0	0	30.8	41.7	73.9	26.1	1067	small, few		
D.R. Norland	2.5	m	5.5	5.5	5.5	5.5	5.5	1	3	0	4	76.1	112.4	67.7	32.3	1079			
Red La Soda	2.5	Lg	4	3	3.5	2.5	3	3	6	2	11	99.7	110.6	90.2	9.8	1072			
Red Pontiac	2.5	Lg	4	3.5	3.5	2.5	2	0	0	0	0	67.1	79.8	84.1	15.9	1069			
RUSSET																			
16478	4	m	4	4	4.5	3	3.5	0	5	0	5	70.6	79.8	88.4	11.6	1089	ok		
18142	4.5	s	3.5	4.5	5	6.5	4.5	0	1	1	2	68.8	92.4	74.4	25.6	1080	blocky		
Goldrush	5	s	4	3.5	3	4	5	5	0	1	6	43.5	72.5	60	40	1079	growth crack		
R. Burbank	5	m	2.5	3.5	4	5	2	0	1	1	2	12.7	18.1	70.0	110.0	1083			
R. Nokotah	6	m	3	4.5	4.5	5	5	4	2	0	6	47.1	58.0	81.3	18.8	1095			
WHITES																			
12823	2.5	s	2	3	2.5	3	2.5	0	2	0	2	27.2	39.9	68.2	31.8	1077			
15129	3	s	1.5	5	3.5	3	3	1	0	1	2	19.9	36.3	55	45	1083			
16180	2.5	m-Lg	5	5	5	5	5	8	5	0	13	90.6	119.6	75.8	24.2	1082			
16489	2	m	2.5	4.5	4	3.5	2	2	0	0	2	29.0	43.5	66.7	33.3	1092	pink eyes		
16966	3	m-Lg	4.5	4.5	3.5	4	3.5	0	0	0	0	38.1	68.9	55.3	44.7	1083			
17662	2	s	2.5	4	3.5	4	3	2	3	0	5	65.3	83.4	78.3	21.7	1082			
Atlantic	2	Lg-m	4.5	4.5	4.5	3.5	4	9	0	1	10	97.9	112.4	87.1	12.9	1083			
BC0894-2	3.5	m-Lg	5	4.5	4.5	3.5	5	0	3	2	5	74.3	87.0	85.4	14.6	1082			
Itasca	3	s	4	5.5	4	3.5	4.5	0	4	0	4	85.2	94.3	90.4	9.6	1071			
Latona	3	s	4.5	5.5	5	4	3	0	2	3	5	39.9	65.3	61.1	38.9	1091	stolons stick, growth crack		
Norchip	3	Lg-m	4.5	4.5	4	5.5	5	0	0	4	4	70.7	85.2	83.0	17.0	1082			
Location																			
Grand Forks, ND (98 days):										Tuber Size							B < 2"		
										Quality (10+ Tubers cut)							A > 2"		
										HH - Hollow Heart									
										VD - Vascular Discoloration									
										IN - Internal Necrosis									
										Shape - 1 (round) - 9 (long)									
										Set - 1 (poor) - 9 (excellent)									
										Shape Uniformity - 1 (poor) - 9 (excellent)									
										Size Uniformity - 1 (poor) - 9 (excellent)									
										Skin Maturity - 1 (poor) - 9 (excellent)									
										Appearance - 1 (poor) - 9 (excellent)									

Minnesota Table 8. Performance of Advanced Seedlings (Replicated Yield Trial) of Minnesota Selections and Cultivars at Hollandale, Minnesota¹ in 1997.

Clone	Growth ²		Tuber Characteristics ³							Tuber Quality ⁴				Cw/A		% of Total ⁵		Sp Gr	Comments
	Vigor	Shape	Size	Set	Shape Unif	Size Unif	Skin Maturity	App	HH	VD	IN	Total Defects	US#1	Total	A's	B's			
REDS																			
17572	5	2.5	m	5.5	5.5	5.5	5	5.5	0	1	0	1	137.8	190.3	72.4	27.6	1057	good here	
17578	6	2.5	m	6	4.5	5	6	5	0	1	0	1	114.2	179.4	63.6	36.4	1062	bit rough	
17922	6	3	Lg	5.5	6	7	6	7	0	1	1	2	230.2	253.8	90.7	9.3	1064	good size	
17986	7.5	5	m	31	4	5	4.5	4	0	9	0	9	150.4	183.1	82.2	17.8	1063	points	
17989	7	4	Lg-m	5.5	6	6	6	6	0	0	1	1	159.5	204.8	77.9	22.1	1071		
17999	4	2	m	5	4	5	3	4	0	2	0	2	132.3	181.3	73.0	27.0	1063	skins	
18049	6.5	2	m	3.5	5.5	6	5	5	2	4	0	6	103.3	150.4	68.7	31.3	1058		
18365	4.5	2	m-Lg	4.5	5	5.5	6.5	6	0	4	0	4	101.5	164.9	61.5	38.5	1053	Rhizoc	
CO86218-2	7	3	Lg	6	6	5.5	6	6	2	11	0	13	114.2	155.9	73.3	26.7	1064	growth crack	
D.R. Norland	5	2	m	4	4.5	4.5	6.5	5	2	1	0	3	137.8	183.1	75.2	24.8	1061		
Red La Soda	4	4	Lg	4.5	3.5	4.5	5.5	3.5	4	3	0	7	157.7	193.9	81.3	18.7	1064		
RUSSET																			
18142	7	6	Lg	6	7	7	7	7	0	3	0	3	157.7	193.9	82.0	18.0	1069	growth crack	
Goldrush	7	7	Lg-m	6	5.5	5.5	7	6	1	4	0	5	143.2	206.6	69.3	30.7	1071	growth crack	
NDL 111-28	6	6	m	4.5	4.5	4.5	4.5	4.5	10	1	0	11	85.2	137.8	61.8	38.2	1080	growth crack	
R Burbank	6.5	7	s	2.5	4.5	3.5	4	4	0	6	0	6	68.9	135.9	50.7	49.3	1074		
R Norlatah	6	7	Lg	4	7	7	7	7	6	1	0	7	126.9	174.0	72.9	27.1	1074		
WHITES																			
15129	6.5	2	s	4	3.5	4	5.5	4	0	0	2	2	92.4	164.9	56.0	44.0	1072	bumpy	
16180	5.5	4	m	6.5	4	5	6	4	16	2	0	18	135.9	219.3	62.0	38.0	1069	rough	
16489	6.5	3	Lg	4.5	4	4	6	4	0	8	0	8	157.7	193.9	81.3	18.7	1074		
16966	6.5	2	s	4	4	5.5	5	3	0	3	0	3	47.1	128.7	36.6	63.4	1080		
17662	6.5	2	m-s	5.5	3.5	4	4.5	3.5	2	0	0	2	135.9	228.4	59.5	40.5	1073		
Allantic	6	3	Lg-m	4	4	3	5.5	4	17	0	0	17	143.2	183.1	78.2	21.8	1080	growth crack	
BC0894-2	6	2.5	m	4.5	5	5	5	5	0	3	0	3	96.1	154.1	62.4	37.6	1084		
Itasca	5.5	3	m-Lg	5.5	4.5	4.5	6	5	0	8	0	8	154.1	233.8	65.9	34.1	1074		
Ladona	3.5	3.5	s	5	3	3.5	6	2	0	5	0	5	87.0	184.9	47.1	52.9	1077		
Location																			
Hollandale, MN (113 days)	Plant Growth			Tuber Characteristics							Quality (10+ Tubers cul)				Tuber Size				
	Vigor - 1 (poor) - 9 (vigorous)			Shape - 1 (round) - 9 (long) Set - 1 (poor) - 9 (excellent) Shape Uniformity - 1 (poor) - 9 (excellent) Size Uniformity - 1 (poor) - 9 (excellent) Skin Maturity - 1 (poor) - 9 (excellent) Appearance - 1 (poor) - 9 (excellent)							HH - Hollow Heart VD - Vascular Discoloration IN - Internal Necrosis				B < 2* A > 2*				

Minnesota Table 9. Performance of Advanced Seedlings (Replicated Yield Trial) of Minnesota Selections and Cultivars at Long Prairie, Minnesota¹ in 1997.

Clone	Plant Growth ²			Tuber Characteristics ³							Tuber Quality ⁴				Cwt/A		% of Total ⁵		Sp. Gr.	Comments							
	Vigor	Maturity	Shape	Size	Set	Shape	Unif	Size	Skin	Maturity	App.	HH	VD	IN	Total Defects	US#1	Total	A's			B's						
REDS																											
17572	6.5	2	2	m-s	7.5	6	6	6	7	6	6	0	4	0	4	279.1	395.1	70.6	29.4	1.057	good color, light set						
17578	7	1.25	2.5	m-Lg	5.5	6	6	6	6.5	6	6	1	0	1	2	366.1	420.5	87.1	12.9	1.075							
17922	6.5	4	3	Lg-m	6.5	6	6	6	6	6	6	0	2	0	2	406.0	464.0	87.5	12.5	1.068	stolon protrudes, stolons sticky						
17986	4	3	3.5	Lg	4	4.5	5	5	7	4	4	0	4	1	5	261.0	282.8	92.3	7.7	1.063	points, long, points, pear, oval shape						
17989	6	3	3	m	6	5	5	5	6.5	5	5	0	0	0	0	351.6	402.4	87.4	12.6	1.069	oval shape						
17999	5.5	3	2	m-s	7.5	6.5	6.5	7	5.5	5	5	0	2	0	2	224.8	384.3	58.5	41.5	1.066	light set, too small						
18049	5.5	1	3	m-Lg	4.5	5	5.5	7	5	5	5	0	5	0	5	228.4	271.9	84.0	16.0	1.067	good color, off shape, blocky shape						
18365	7	1	3	m-s	8	5.5	6	7	5	5	5	0	1	0	1	257.4	391.5	65.7	34.3	1.065	light set, oval shape, can get small						
CO86218-2	5.5	2.5	2	m-s	5.5	5	5	5	7	5	5	1	4	0	5	155.9	253.8	61.4	38.6	1.067	too small						
D.R. Norland	7	1	3	Lg	5	4	4.5	6	4	4	4	0	3	1	4	304.5	340.8	89.4	10.6	1.060	deep eyes, blocky shape						
Red La Soda	7	2.5	3	Lg	7	4	5	6.5	4	4	4	2	0	5	7	409.6	445.9	91.9	8.1	1.067	lumpy						
RUSSET																											
18142	8	1.75	6.5	Lg	4	6.5	6.5	6.5	7	6	6	0	2	0	2	409.6	445.9	93.2	6.8	1.074							
Goldrush	6	1.75	7	Lg	6.5	6.5	6.5	6.5	7	6.5	6.5	1	0	0	1	402.4	435.0	92.5	7.5	1.071							
N.D.L. 111-28	7.5	4	7.5	m-Lg	5	5	6	6.5	6.5	5.5	5.5	17	0	1	18	373.4	409.6	91.2	8.8	1.087	points, curves						
R. Burbank	7.5	3.5	6.5	m-s	4.5	4	5	6.5	6.5	4.5	4.5	11	0	3	14	315.4	377.0	83.7	16.3	1.088							
R. Norkolah	7	1.5	7	Lg	5	5.5	5	5	6	5.5	5.5	1	2	4	7	351.6	377.0	93.3	6.7	1.075							
WHITES																											
15129	6.5	2	2.5	s	6.5	4.5	5	5	6	4	4	0	3	1	4	275.5	362.5	76.0	24.0	1.074	variable, too small						
16180	7.5	2.5	3.5	m-Lg	6.5	5	4.5	6	6	4.5	4.5	0	1	1	2	337.1	409.6	82.3	17.7	1.077	rough, long, points						
16489	6.5	4	2.5	m-Lg	7	6	5.5	6	6	5.5	5.5	0	1	1	2	362.5	431.4	84.0	16.0	1.086	pink eyes						
16966	7.5	3.5	2	m-s	8	4.5	5	5	6.5	4	4	0	0	3	3	290.0	474.9	61.1	38.9	1.079	points, rough						
17662	7	3	2.5	m	5	4.5	4.5	6	4.5	4.5	4.5	0	0	1	1	395.1	449.5	87.9	12.1	1.075	small						
Atlantic	7.5	3	3	Lg	3.5	4	5	6	6	4.5	4.5	14	4	3	21	337.1	366.1	92.1	7.9	1.086							
BC0894-2	7	1.5	2	s	5	4.5	5	5	6	4.5	4.5	0	3	0	3	304.5	344.4	88.4	11.6	1.077							
Itasca	7.5	3	3	m-Lg	5.5	4.5	5	5	6.5	4.5	4.5	0	0	0	0	369.8	453.1	81.6	18.4	1.076	oval shape						
Lalona	5.5	4	2	s	7.5	6	5.5	6	5.5	6	3.5	0	13	1	14	315.4	464.0	68.0	32.0	1.080	too small						
Norchip	7	2	2	m	5	4	5	5	6	4	4	0	2	1	3	304.5	358.9	84.8	15.2	1.084	small						
¹ Location											² Plant Growth			³ Tuber Characteristics					⁴ Quality (10+ Tubers cut)			⁵ Tuber Size					
Long Prairie, MN (128 days)											Vigor - 1 (poor) - 9 (vigorous) Maturity - 1 (early) - 5 (late)					Shape - 1 (round) - 9 (long) Set - 1 (poor) - 9 (excellent) Shape Uniformity - 1 (poor) - 9 (excellent) Size Uniformity - 1 (poor) - 9 (excellent) Skin Maturity - 1 (poor) - 9 (excellent) Appearance - 1 (poor) - 9 (excellent)					HH - Hollow Heart VD - Vascular Discoloration IN - Internal Necrosis					B < 2* A > 2*	

Minnesota Table 10. Mean Performance of Advanced Seedlings (Replicated Yield Trial) of Minnesota Selections and Cultivars at Five Minnesota and One North Dakota Location¹ in 1997.

Plant Growth ²			Tuber Characteristics ³							Tuber Quality ⁴				Cwt/A		% of Total ⁵										
Clone	Vigor	Maturity	Shape	Set	Shape	Unif.	Size	Skin	App.	HH	VD	IN	Total	Defects	US#1	Total	A's	B's	Sp. Gr.							
REDS																										
17572	59	2.5	2.5	6.1	5.5	5.5	5.6	5.8	5.6	1	1.2	0.2	2.4	2.4	215.3	278.0	74.8	25.2	1.057							
17578	68	2.3	3.2	4.7	5.3	4.8	4.8	5.3	4.5	1.2	0.4	0.4	2	2	220.0	261.4	77.6	22.4	1.065							
17922	7.1	3.6	2.6	5.4	5.5	6.0	4.8	4.8	5.6	0.2	0.8	0.4	1.4	1.4	288.6	325.5	85.3	14.7	1.064							
17986	7.0	3.3	3.7	9.7	4.6	5.0	4.8	4.8	4.2	0	3	0.2	3.2	3.2	216.1	251.9	80.9	19.1	1.063							
17989	7.0	3.5	3.5	4.7	5.1	5.3	5.0	4.8	4.8	0.2	0.2	0.2	0.6	0.6	190.0	232.0	72.3	27.7	1.068							
17999	5.8	3.4	2.3	5.2	4.9	4.9	3.6	3.9	3.9	0	1.2	0	1.2	0	159.5	239.6	61.1	38.9	1.061							
18049	7.0	1.6	2.8	3.9	4.6	5.0	5.1	4.5	4.5	0.8	1.8	0	2.6	2.6	195.8	228.4	80.7	19.3	1.064							
18365	6.6	1.5	2.7	5.5	5.8	5.9	6.1	5.6	5.6	1	3.4	0.6	5	5	186.0	256.7	70.2	29.8	1.058							
CO86218-2	6.8	3.1	2.2	4.6	5.6	5.5	6.9	5.3	5.3	0.6	3	0.2	4	4	150.1	212.1	70.8	29.2	1.063							
D.R. Norland	6.6	1.4	2.7	4.7	4.9	4.9	5.6	4.9	4.9	1.2	1.4	0.2	2.8	2.8	210.3	244.7	82.7	17.3	1.062							
Red La Soda	6.5	2.4	3.4	4.7	3.6	4.8	4.7	4.0	4.0	3.2	2	2	7.2	7.2	248.7	277.0	88.6	11.4	1.063							
Red Pontiac	8.0	3.5	2.7	4.3	4.0	4.5	3.8	3.2	3.2	3.3	0.0	0.7	4.0	4.0	259.2	285.2	85.7	14.3	1.060							
RUSSET																										
16478	8.8	3.3	4.3	4.8	4.8	5.3	4.3	4.3	5.0	0.3	2.3	0.0	2.7	2.7	262.8	293.0	92.0	8.0	1.082							
18142	7.8	2.0	6.1	4.7	6.0	6.1	7.0	6.1	6.1	0.4	1.4	0.4	2.2	2.2	265.4	296.5	87.8	12.2	1.068							
Goldrush	7.1	2.3	6.6	5.1	5.1	5.3	5.7	6.0	6.0	1.6	0.8	0.2	2.6	2.6	225.8	261.0	80.7	19.3	1.067							
NDL 111-28	6.8	4.0	6.8	4.8	4.8	5.3	5.5	5.0	5.0	13.5	0.5	0.5	14.5	14.5	229.3	273.7	76.5	23.5	1.084							
R. Burbank	7.0	3.8	6.0	3.4	3.6	3.9	4.8	3.4	3.4	2.4	1.8	1.0	5.2	5.2	161.3	220.8	68.7	47.3	1.078							
R. Nokolah	7.3	2.1	6.8	4.4	6.0	5.8	6.2	6.3	6.3	3.2	1.0	1.0	5.2	5.2	226.2	253.0	86.1	13.9	1.075							
WHITES																										
12823	7.8	4.3	2.5	3.2	3.5	3.8	3.5	3.5	3.5	2.0	0.7	1.7	4.3	4.3	174.6	218.7	72.9	27.1	1.073							
15129	7.3	2.5	2.9	4.7	4.4	4.4	5.1	4.3	4.3	1.0	0.6	0.8	2.4	2.4	258.1	310.7	73.9	26.1	1.069							
16180	7.0	2.6	3.4	6.1	4.8	4.9	5.6	5.2	5.2	7.4	2.2	0.2	9.8	9.8	312.8	373.7	79.8	20.2	1.071							
16489	7.4	3.4	2.8	4.8	4.8	4.5	5.3	4.1	4.1	0.8	1.8	0.2	2.8	2.8	273.7	314.3	82.6	17.4	1.078							
16966	7.4	3.8	2.4	5.5	4.3	4.9	5.1	3.8	3.8	0.2	0.6	1.4	2.2	2.2	252.7	342.6	64.7	35.3	1.076							
17662	7.0	3.0	2.6	4.9	4.6	4.5	5.1	4.7	4.7	0.8	0.6	0.2	1.6	1.6	327.3	384.3	81.1	18.9	1.071							
Atlantic	7.5	3.3	2.7	4.2	4.5	4.5	5.2	4.4	4.4	11.6	1.2	0.8	14.2	14.2	270.1	304.1	87.4	12.6	1.081							
BC0894-2	6.6	2.4	2.8	4.7	5.3	5.3	5.3	5.2	5.3	0.8	1.8	0.4	3.0	3.0	209.5	254.8	80.6	19.4	1.072							
Itasca	7.4	2.9	3.2	5.0	5.0	4.9	5.2	5.0	5.0	0.2	2.8	0.0	3.0	3.0	316.8	367.9	84.3	15.7	1.070							
Latona	6.1	4.1	2.9	5.7	4.9	4.8	5.5	3.5	3.5	1.0	4.4	1.0	6.4	6.4	265.4	354.5	68.2	31.8	1.077							
Norchip	7.5	2.5	2.8	4.5	4.5	4.5	5.6	5.0	5.0	0.8	1.0	2.8	4.5	4.5	302.2	333.0	88.8	11.2	1.077							
¹ Locations										² Plant Growth					³ Tuber Characteristics					⁴ Quality (10+ Tubers cut)		⁵ Tuber Size				
Early - Becker, MN (111 days)										Vigor - 1 (poor) - 9 (vigorous)					Shape - 1 (round) - 9 (long)					HH - Hollow Heart		B < 2*				
Late - Becker, MN (146 days)										Maturity - 1 (early) - 5 (late)					Set - 1 (poor) - 9 (excellent)					VD - Vascular Discoloration					A > 2*	
Grand Forks, ND (98 days)															Shape Uniformity - 1 (poor) - 9 (excellent)					IN - Internal Necrosis						
Hollandale, MN (113 days)															Size Uniformity - 1 (poor) - 9 (excellent)											
Long Prairie, MN (128 days)															Skin Maturity - 1 (poor) - 9 (excellent)											
															Appearance - 1 (poor) - 9 (excellent)											

Minnesota Table 11. Mean Performance of Advanced Seedlings (North Central Regional Trial) Becker, Minnesota¹ in 1997.

Growth ²	Tuber Characteristics ³				External Tuber Quality ⁴				Internal Tuber Quality ⁵				Ow/A		% of Total ⁶							
	Maturity	Shape	Set	Shape Unif.	Size Unif.	Skin Maturity	App.	% Knobs	% Green	% Gr.Cr.	% Type	Scab Cover	HH	% VD	% IN	Total Defects	US#1	Total	B	A's	B's	Sp.Gr.
REDS																						
ND 2225-1 Red Pontiac Red Norland	3	2	5	6	7	7	6	0	0	0	4	1	1	2	1	4	305	393	89	77.4	22.6	1.055
	3	4	4	4	4	6	3	2	0	1	5	2	2	2	1	5	353	379	25	93.3	6.7	1.061
	3	3	4	6	6	6	5	0	0	0	3	1	1	1	1	3	295	315	20	93.7	6.3	1.057
RUSSEI																						
R. Norkotah W 1151 R. Burbank W 1348	4	6	5	6	6	7	6	0	1	0	1	0	3	2	0	5	518	560	42	92.6	7.4	1.083
	4	7	5	6	6	7	6	8	1	1	4	1	11	0	2	13	473	500	27	94.6	5.4	1.086
	4	6	5	3	4	6	4	2	1	1	3	1	14	4	0	18	366	392	25	93.5	6.5	1.072
	4	7	6	7	7	7	7	1	1	1	4	2	3	4	1	8	343	375	33	91.3	8.7	1.064
WHITES																						
MN 16489 MN 16180 MN 16966 ND 3828-15 W 1313 Atlantic ND 2676-10 MSB O76-2 Norchip MSB O73-2 Snowden MSB 106-7	3	3	6	6	6	6	5	2	0	2	3	1	3	1	4	8	567	613	45	92.6	7.4	1.079
	4	3	5	5	5	5	5	1	1	2	1	3	1	1	1	3	529	584	54	90.7	9.3	1.079
	4	3	7	6	6	6	5	2	1	5	1	0	1	2	2	5	504	527	24	95.5	4.5	1.068
	4	3	5	5	5	5	5	0	1	1	4	2	4	1	3	8	466	515	49	90.5	9.5	1.096
	4	3	6	7	6	6	7	0	1	1	3	4	2	2	1	5	439	488	49	90.0	10.0	1.083
	4	3	5	5	5	5	5	2	1	0	2	1	7	1	0	8	410	462	53	88.6	11.4	1.067
	3	2	5	6	6	6	6	1	1	6	3	1	2	2	5	9	368	392	24	94.0	6.0	1.065
	4	4	5	5	5	5	5	0	1	0	1	1	2	3	4	9	305	373	69	81.6	18.4	1.070
	3	3	4	5	5	4	4	0	0	1	4	1	7	4	3	14	324	368	44	88.2	11.8	1.078
	4	2	4	5	5	5	5	0	1	1	2	3	10	2	1	13	317	363	45	87.5	12.5	1.084
	4	3	5	7	7	7	7	0	1	2	4	1	2	4	2	8	303	339	36	89.3	10.7	1.072
	3	7	6	5	6	5	5	0	0	1	2	1	0	0	0	0	208	299	91	69.7	30.3	1.084

¹ Location	³ Tuber Characteristics	⁴ External Quality (100 Tubers)	⁵ Internal Quality (100 Tubers cut)	⁶ Tuber Size
Late - Becker, MN (146 days)	Shape - 1 (round) - 9 (long) Set - 1 (poor) - 9 (excellent)	Scab Type - 1 (surface) - 5 (deep pitted) Scab Coverage - 1 (<10%) - 5 (>50%)	HH - Hollow Heart VD - Vascular Discoloration IN - Internal Necrosis	B: < 2" A: > 2"
² Plant Growth	Shape Uniformity - 1 (poor) - 9 (excellent) Size Uniformity - 1 (poor) - 9 (excellent) Skin Maturity - 1 (poor) - 9 (excellent) Appearance - 1 (poor) - 9 (excellent)			
Maturity - 1 (early) - 5 (late)				

Minnesota Table 12. Scab Resistance of Minnesota Seedlings, Enhancement Germplasm, and Selected Cultivars at Becker in 1997.

Clone	Scab			Scab			Scab			Scab			Scab			Scab		
	Lesion Type ¹	Coverage ²	Clone	Lesion Type ¹	Coverage ²	Clone	Lesion Type ¹	Coverage ²	Clone	Lesion Type ¹	Coverage ²	Clone	Lesion Type ¹	Coverage ²	Clone	Lesion Type ¹	Coverage ²	Clone
12823	2	L	18468	1	T	19266	2	T	19328	1	T	19390	3	T	19468	2	L	19468
15129	3	L	18574	1	T	19267	5	L	19329	0	0	19393	5	M	19469	1	T	19469
15578	1	L	18653	3	L	19268	3	T	19334	2	T	19394	5	L	19470	2	L	19470
15620	5	H	18699	2	T	19271	5	H	19335	4	T	19395	1	T	19471	3	L	19471
15622	1	T	18702	1	T	19272	2	T	19336	3	L	19397	2	T	19472	1	T	19472
16180	2	T	18709	1	T	19275	0	0	19340	3	T	19404	1	T	19473	2	T	19473
16191	2	L	18710	0	0	19276	2	L	19341	2	L	19407	1	T	19477	5	L	19477
16201	2	L	18713	1	T	19278	2	T	19342	4	T	19413	1	T	19478	5	L	19478
16398	4	H	18714	0	0	19279	5	M	19343	5	L	19416	1	T	19480	4	L	19480
16404	3	H	18750	5	M	19280	4	M	19344	2	T	19417	4	L	19481	1	T	19481
16447	3	H	18751	1	T	19281	5	L	19345	2	T	19419	1	T	19482	2	L	19482
16462	3	T	18757	5	M	19284	2	L	19346	2	T	19420	1	T	19483	4	L	19483
16478	1	T	18758	2	L	19285	2	L	19347	2	T	19421	2	T	19484	3	L	19484
16489	2	T	18768	1	T	19286	2	M	19348	5	L	19423	2	L	19485	1	L	19485
16832	1	T	18769	1	T	19287	2	T	19349	5	L	19425	2	T	19486	1	T	19486
16966	3	L	18771	0	0	19288	1	T	19350	0	0	19427	1	T	19487	2	L	19487
16988	2	L	18772	1	T	19290	0	0	19351	0	0	19429	1	T	19488	3	M	19488
17048	3	M	18773	1	L	19291	0	0	19353	2	T	19430	3	T	19489	5	M	19489
17335	2	M	18774	1	T	19293	0	0	19356	5	T	19431	1	T	19490	3	M	19490
17572	2	L	18799	2	T	19294	4	T	19357	5	T	19432	1	T	19492	1	T	19492
17637	3	H	18808	2	L	19295	5	L	19358	4	L	19433	2	T	19493	3	L	19493
17663	3	L	19001	2	T	19297	2	T	19359	1	T	19436	1	T	19494	1	T	19494
17664	1	L	19001	4	M	19298	3	L	19360	5	T	19439	3	T	19495	2	L	19495
17678	2	L	19002	4	L	19300	2	L	19361	5	T	19440	1	T	19496	2	L	19496
17716	2	L	19003	5	M	19304	2	L	19362	3	T	19441	2	L	19497	3	L	19497
17742	3	L	19004	2	L	19306	2	T	19366	3	T	19443	1	T	19498	3	L	19498
17793	2	L	19025	1	T	19307	2	T	19367	5	T	19444	3	T	19499	4	L	19499
17861	4	M	19045	1	T	19309	5	H	19371	3	T	19446	5	M	19501	2	T	19501
17923	3	T	19047	3	H	19310	3	L	19372	3	T	19447	4	L	19502	2	L	19502
17925	1	T	19091	3	T	19311	2	L	19373	3	T	19450	4	L	19503	3	L	19503
17939	5	L	19251	1	L	19312	5	T	19374	2	T	19452	0	0	19505	4	L	19505
17941	3	L	19252	1	M	19314	5	L	19375	1	T	19453	2	L	19506	3	T	19506
17986	1	T	19254	1	L	19315	4	L	19376	5	L	19454	2	L	19507	2	M	19507
17993	2	T	19255	5	M	19316	5	M	19377	1	T	19457	4	M	19508	5	M	19508
17996	1	M	19256	1	T	19317	5	H	19378	2	T	19458	5	M	19510	3	M	19510
17999	3	T	19257	2	T	19318	5	L	19379	3	T	19459	5	M	19511	1	M	19511
18038	5	L	19258	1	T	19319	1	T	19381	1	T	19460	1	T	19512	2	L	19512
18068	2	T	19259	0	0	19320	5	L	19382	4	T	19461	3	L	19513	1	T	19513
18096	1	T	19260	0	0	19321	4	L	19383	1	T	19462	3	L	19514	1	T	19514
18153	1	L	19261	2	T	19322	3	T	19384	1	T	19463	2	T	19515	0	0	19515
18364	1	T	19262	5	M	19323	5	T	19385	2	T	19464	4	L	19518	2	T	19518
18365	1	T	19264	2	L	19324	4	T	19387	2	T	19466	2	M	19519	3	L	19519
18370	2	L	19265	3	L	19326	2	T	19388	3	L	19467	1	T	19520	1	T	19520

¹Scab Lesion Types (1-5)²Scab Coverage

0= No scab

1= Raised lesion

3= Lesion breaking periderm

5= Deep pit

T= Trace

L=Light

M=Medium

H=Heavy

Minnesota Table 12. Continued.

Clone	Scab Lesion			Scab Lesion			Scab Lesion			Scab Lesion			Scab Lesion			Scab Lesion		
	Type ¹	Coverage ²	Clone	Type ¹	Coverage ²	Clone	Type ¹	Coverage ²	Clone	Type ¹	Coverage ²	Clone	Type ¹	Coverage ²	Clone	Type ¹	Coverage ²	Clone
19521	2	L	85434	5	H	86101	5	H	19028	5	T	19223	2	L				
19522	3	M	85438	5	L	86103	5	H	19031	2	M	19229	3	L				
19523	2	M	85439	5	L	86108	2	T	19032	2	T	BC0894-2	2	L				
19524	2	M	85452	2	L	86109	0	0	19033	3	L	CO86218-2	3	L				
19525	1	L	85463	5	H	86110	3	L	19041	2	T	D.R. Norlan	2	T				
19526	2	L	85469	2	L	86111	1	L	19042	1	T	Latona	2	L				
19528	1	T	85472	2	L	86112	1	L	19044	1	T	Norchip	4	L				
19530	5	M	85475	5	M	86113	3	L	19048	1	T	Red Pontiac	5	L				
19531	3	L	85476	5	H	86114	1	L	19050	2	M							
19532	5	M	85477	2	M	86115	5	M	19055	3	M							
19533	5	M	85481	1	T	86116	3	L	19073	3	M							
19534	5	M	85483	1	T	86117	1	T	19087	1	T							
19535	5	M	85510	5	H	86118	5	L	19088	2	T							
19540	5	H	85517	1	H	86119	3	L	19089	3	L							
19542	4	M	85541	1	L	86120	1	T	19090	1	L							
19545	1	L	85549	5	M	86122	2	M	19094	1	L							
19553	2	L	85554	3	T	86123	3	M	19096	1	T							
82462	2	L	85561	3	H	86124	2	M	19097	2	T							
83007	1	T	85567	1	T	86125	2	M	19098	2	T							
83039	1	T	85579	1	T	86126	2	M	19102	2	L							
83545	1	L	85616	2	L	86127	4	L	19106	2	T							
83657	3	T	85627	0	0	86128	3	T	19111	1	T							
83806	1	L	85636	1	H	86129	5	M	19113	1	T							
83835	1	T	85638	5	M	86130	1	T	19127	2	T							
83959	1	T	85654	1	L	86131	1	T	19129	5	M							
84078	3	L	85852	4	M	86132	3	M	19130	2	L							
84362	2	T	85873	5	L	86133	1	T	19131	2	L							
84364	5	L	85874	5	L	18130	1	T	19137	5	T							
84451	1	L	85878	5	M	18740	2	T	19140	3	L							
84509	2	T	85881	5	M	18747	2	T	19147	5	L							
84970	1	T	85882	3	L	18749	2	L	19150	3	L							
85038	4	L	85883	3	L	18752	1	T	19157	3	L							
85387	1	T	85884	2	T	18756	1	T	19159	2	L							
85393	1	T	85885	5	L	18761	1	T	19163	1	M							
85402	3	T	85887	1	T	18762	5	L	19164	2	L							
85403	1	T	85888	5	L	18766	5	L	19167	0	0							
85406	0	0	85889	5	M	18815	2	T	19174	2	M							
85410	0	0	85895	3	M	19000	1	L	19175	2	M							
85426	1	T	85905	2	T	19005	3	T	19189	1	L							
85430	1	T	85906	5	L	19012	0	0	19199	2	M							
85431	1	T	85911	3	T	19013	2	L	19216	5	L							
85432	3	T	85912	5	L	19023	2	M	19218	2	L							
85433	1	T	85917	1	L	19026	2	L	19222	1	L							

¹Scab Lesion Types (1-5)

0= No scab

1= Raised lesion

3= Lesion breaking periderm

5= Deep pit

²Scab Coverage

T=Trace

L=Light

M=Medium

H=Heavy

Minnesota Table 13. Results of Breeding Program Late Blight Trial at Rosemount, Minnesota in 1997¹.

<u>Resistant</u>	<u>Moderate Resistance</u>	<u>Reduced Susceptibility</u>	<u>Susceptible</u>
AWN 86514-2	BO 288-17	A 84118-3	Krantz
BO 692-4	Robijn	AO 80432-1	Nordonna
BO 718-3	Bzura	Dorita	B 1004-8
BO 767-2	Greta	CO 083008-1	
	Bertita		All Minnesota Selections
	Zarevo		
	Elba		
	AO 84275-3		
	BO 749-2F		
	Pimpernel		
	Stobrawa		
	BO 811-3		
	Libertas		

¹ Planted June 9, 1997.

Inoculated August 14, 1997; A2, US8.

Minnesota Table 14a. *Verticillium dahliae* Resistance of Minnesota Seedlings, Enhancement Germplasm, and Selected Cultivars at Grand Forks, ND in 1997.

Clone	Vert. Rating ¹	Clone	Vert. Rating ¹	Clone	Vert. Rating ¹	Clone	Vert. Rating ¹	Clone	Vert. Rating ¹
15620	.	86126	4	D.R. Norland	3	16489	.	18756	5
15622	3	86127	3	85567	.	16966	0	18757	4
16191	1	86128	2	85579	4	17572	1	18758	5
16201	1	Red Pontiac	2	86101	3	15578	.	18761	.
16462	2	86129	4	86108	.	D.R. Norland	.	18762	3
16832	4	86130	4	83806	5	17923	.	18766	0
D.R. Norland	1	86131	5	83835	2	17925	2	18768	3
17637	2	86132	4	83959	4	17939	.	Red Pontiac	2
17664	2	86133	5	84078	5	17941	.	18769	4
17793	1	84451	0	84362	5	17986	2	18771	2
83007	5	85038	4	84364	5	17993	.	18772	2
83039	4	85387	1	84509	4	17996	.	18773	3
83545	5	85393	1	85873	3	Norchip	.	18774	4
Norchip	3	85402	1	85874	2	17999	.	18799	.
16398	2	85403	2	D.R. Norland	3	19001	2	18808	3
17861	4	85406	.	85878	0	18038	.	18815	1
16404	2	85410	0	85881	0	18068	3	19000	4
16447	1	D.R. Norland	5	85882	.	18096	.	D.R. Norland	1
16988	1	85426	1	85883	5	18130	4	19001	4
17335	0	85430	1	85884	2	Red Pontiac	.	19002	2
17663	1	85431	1	85885	5	18153	.	19003	4
17678	1	85432	5	85887	.	18364	4	19004	4
17716	.	85433	5	85888	5	18365	2	19005	3
17742	4	85463	5	85889	0	18370	0	19012	3
86109	2	85469	.	Norchip	4	18488	1	19013	5
D.R. Norland	.	85472	5	85895	4	18574	.	Norchip	5
86111	4	85475	2	85852	5	18653	3	19023	5
86112	4	Norchip	4	85434	.	18699	1	19025	5
86113	3	85481	.	85438	2	D.R. Norland	3	19026	5
86114	4	85483	1	85439	3	18702	3	19028	4
86115	3	85627	2	85452	5	18709	2	19031	5
86116	3	85636	.	85905	1	18710	1	19032	4
86117	5	85638	5	85906	3	18713	4	19033	3
86118	3	84970	1	85911	3	18714	1	19041	3
Norchip	4	85477	1	85912	5	18740	3	19042	1
86119	3	85510	2	D.R. Norland	4	18747	3	Red Pontiac	4
86120	2	85517	3	85917	2	18749	.	19044	4
86122	5	85541	4	12823	0	18750	4	19045	5
86123	5	85549	4	15129	.	Norchip	3	19047	5
86124	3	85554	4	16180	.	18751	.	19048	2
86125	5	85561	2	16478	3	18752	2	19050	.

Verticillium Rating¹

0 = 0 wilt
1 = 1 - 12% wilt
2 = 13 - 25% wilt
3 = 26 - 50% wilt
4 = 51 - 75% wilt
5 = 76 - 100% wilt

Clone	Vert. Rating ¹	Clone	Vert. Rating ¹	Clone	Vert. Rating ¹	Clone	Vert. Rating ¹
19229	3	19349	5	19461	5	19530	.
19252	5	19353	4	19462	3	19531	0
19254	5	19358	5	19463	2	19534	1
19257	4	Red Pontiac	3	19464	3	19535	3
19259	2	19374	2	19466	2	19542	4
19260	5	19375	4	Red Pontiac	4		
19261	4	19376	4	19467	0		
19262	3	19378	2	19469	5		
19264	5	19379	4	19470	1		
19265	5	19394	5	19472	1		
19267	5	D.R. Norland	5	19473	5		
19268	5	19395	5	19477	5		
Norchip	4	19397	5	19478	5		
19271	5	19407	3	19481	5		
19275	3	19416	4	19483	5		
19278	2	19417	5	19484	4		
19279	4	19419	5	Norchip	4		
19280	4	19420	3	19485	2		
19285	5	D.R. Norland	4	19487	5		
19286	5	19423	3	19488	5		
D.R. Norland	3	19427	5	19489	5		
19287	5	19429	5	19492	5		
19288	4	19430	4	19493	4		
19290	3	19431	2	Red Pontiac	4		
19291	5	19432	4	19495	3		
19295	2	19433	5	19499	4		
19297	5	19436	4	19505	5		
19300	3	19439	5	19506	1		
Red Pontiac	3	Red Pontiac	4	19507	2		
19311	5	19440	4	19511	1		
19312	5	19441	5	Norchip	4		
19320	5	19444	1	19513	.		
19321	5	19446	4	19515	.		
19324	3	19447	3	19518	.		
19326	3	19450	3	19521	.		
19328	3	19452	3	19522	0		
Red Pontiac	2	19453	3	19523	.		
19335	3	19457	5	19525	.		
19341	4	D.R. Norland	5	19526	.		
19342	4	19458	5	19528	.		
19346	5	19460	5	D.R. Norland	.		

Verticillium Rating¹

0 = 0 wilt 2 = 13 - 25% wilt 4 = 51 - 75% wilt
 1 = 1 - 12% wilt 3 = 26 - 50% wilt 5 = 76 - 100% wilt

Minnesota Table 14b. *Verticillium albo-atrum* Resistance of Minnesota Seedlings, Enhancement Germplasm, and Selected Cultivars at Grand Forks, ND in 1997.

Clone	Vert. Rating ¹	Clone	Vert. Rating ¹	Clone	Vert. Rating ¹	Clone	Vert. Rating ¹	Clone	Vert. Rating ¹	Clone	Vert. Rating ¹
15620	1	86126	3	D.R. Norland	2	16966	1	18762	2	19127	2
15622	4	86127	3	85567	2	17572	4	18766	3	19129	4
16191	3	86128	3	85579	4	15578	4	18768	4	19130	4
16201	2	Red Pontiac	4	86101	3	D.R. Norland	2	Red Pontiac	5	Red Pontiac	3
16462	3	86129	5	86108	4	17923	5	18769	5	19131	3
16832	3	86130	5	83806	5	17925	2	18771	2	19137	5
D.R. Norland	2	86131	5	83835	1	17939	4	18772	1	19140	2
17637	3	86132	5	83959	2	17941	5	18773	3	19147	1
17664	4	86133	5	84078	5	17986	5	18774	1	19150	3
17793	2	84451	0	84362	4	17993	4	18799	2	19157	2
83007	5	85038	5	84364	5	17996	3	18808	5	19159	1
83039	5	85387	1	84509	4	Norchip	4	18815	1	19163	1
83545	5	85393	2	85873	2	17999	4	19000	3	19164	3
Norchip	4	85402	3	85874	1	19001	3	D.R. Norland	2	D.R. Norland	3
16398	3	85403	4	D.R. Norland	1	18038	4	19005	3	19167	1
17861	5	85406	2	85878	1	18096	5	19013	4	19174	0
16404	2	85410	1	85881	1	18153	5	19023	3	19175	0
16447	2	D.R. Norland	4	85882	3	18364	4	19026	5	19199	1
16988	3	85426	1	85883	4	18365	5	19028	4	19216	3
17335	3	85430	2	85884	2	18370	4	19031	5	19218	4
17663	2	85431	1	85885	3	18468	4	19032	4	Norchip	2
17678	1	85432	5	85887	2	18574	3	19033	4	19222	4
17716	3	85433	5	85888	2	18653	4	19041	1	19229	3
17742	5	85463	4	85889	2	18699	1	19042	2		
86109	2	85469	0	Norchip	2	D.R. Norland	5	Red Pontiac	3		
D.R. Norland	3	85472	5	85895	4	18702	2	19048	3		
86111	5	85475	5	85852	4	18709	5	19050	4		
86112	4	Norchip	5	85434	4	18710	2	19055	5		
86113	3	85481	0	85438	2	18713	2	19073	4		
86114	4	85483	2	85439	1	18714	3	19087	5		
86115	5	85627	2	85452	5	18740	5	19088	5		
86116	3	85636	5	85905	0	18747	5	19089	5		
86117	5	85638	3	85906	2	18749	5	19090	4		
86118	4	84970	0	85911	3	18750	4	19094	1		
Norchip	4	85477	2	85912	4	Norchip	2	19096	4		
86119	5	85510	5	85917	4	18751	0	19097	4		
86120	5	85517	2	12823	2	18752	4	19098	5		
86122	5	85541	5	15129	4	18756	5	Norchip	3		
86123	5	85549	4	16180	3	18757	4	19102	5		
86124	4	85554	5	16478	3	18758	5	19106	2		
86125	5	85561	2	16489	2	18761	4	19113	1		

Verticillium Rating¹

0 = 0 wilt 2 = 13 - 25% wilt 4 = 51 - 75% wilt
1 = 1 - 12% wilt 3 = 26 - 50% wilt 5 = 76 - 100% wilt

Minnesota Table 15. Potato leafhopper (PLH) and Colorado potato beetle (CPB) resistance of wild species.

Species	PLH nymphs per plant	PLH adults per plant	PLH per plant ^a	CPB score ^b	Size score ^c	Number accessions evaluated ^d
brc	10.5 a	2.7 c-f	13.2 a	4.4	3.4	3
RB	5.7 a-d	6.9 a	12.7 ab	NA ^e	6.0	1
sto	6.0 a-c	6.4 a-c	12.4 a-c	8.0	5.1	2
scr	5.1 a-g	6.0 a-d	11.1 a-d	7.0	4.6	3
lpt	5.2 a-f	5.7 a-e	10.9 a-e	6.6	5.1	2
spl	3.9 a-h	6.8 ab	10.7 a-f	5.8	5.2	5
cur	4.8 a-h	4.8 a-f	9.5 a-g	5.7	3.6	2
adg	5.4 a-e	3.3 a-f	8.7 a-h	4.5	3.1	6
fen	4.2 a-h	3.9 a-f	8.1 a-i	7.9	3.4	4
mlt	6.1 ab	1.9 d-f	8.0 a-i	3.5	1.6	4
grl	4.5 a-h	2.9 c-f	7.3 a-i	6.5	3.5	13
buk	4.6 a-h	2.3 c-f	6.9 a-i	3.5	1.7	6
stn	3.2 a-h	3.2 b-f	6.3 a-i	5.3	3.7	3
phu	4.8 a-h	1.3 ef	6.1 b-i	4.7	3.3	1
spg	2.8 b-h	3.1 c-f	5.9 b-i	4.9	3.7	3
pm	2.3 b-h	3.2 b-f	5.5 c-i	7.6	4.8	3
cop	4.3 a-h	1.1 ef	5.4 c-i	7.0	3.3	1
vrn	1.4 b-h	3.8 a-f	5.2 d-i	5.0	4.3	11
amb	2.2 b-h	2.6 c-f	4.8 d-i	4.5	3.9	4
ktz	1.9 b-h	2.4 c-f	4.3 d-i	7.6	5.1	2
ver	1.3 c-h	2.8 c-f	4.1 e-i	6.5	4.1	5
chc	0.4 h	3.5 a-f	3.9 e-i	9.0	8.1	3
can	2.1 b-h	1.7 d-f	3.8 e-i	6.0	3.3	13
bst	3.7 a-h	0.1 f	3.8 f-i	7.5	1.0	3
snk	1.5 b-h	1.6 d-f	3.1 f-i	6.8	3.3	1
med	0.8 d-h	1.3 d-f	2.1 g-i	5.4	3.6	4
cnd	1.4 b-h	0.4 f	1.8 g-i	7.7	3.0	2
mga	0.7 e-h	1.1 ef	1.8 hi	3.6	1.3	2
agf	0.4 f-h	1.1 ef	1.5 hi	8.3	3.0	1
ber	0.4 gh	0.7 f	1.2 i	9.0	7.2	3

Means followed by the same letter within columns are not significantly different ($P > 0.05$); REGW-F test.

Plot design: RCBD, 4 reps, 7 plants/rep.

^aNymphs and adults were combined following vacuum sampling of plants for PLH.

^bCPB defoliation score: 1 = susceptible and 9 = resistant.

^cSize score: 1 = smallest plants and 9 = largest plants.

^dAccessions were combined within species.

Nebraska Potato Variety Trials

Alexander D. Pavlista

Extension Potato Specialist

University of Nebraska

Panhandle Research and Extension Center

4502 Avenue I

Scottsbluff, NE 69361

Introduction

In 1997, trials were conducted at Imperial, Kearney, O'Neill, and Scottsbluff. All entries were planted at Imperial and Scottsbluff, the latter also had three additional entries, while white-skinned entries were planted at Kearney and the other entries at O'Neill. There were 18 white-skinned (20 in Scottsbluff), 11 russet, 6 red (7 in Scottsbluff), and 1 yellow entries. Nebraska participated in the North Central Regional (NCR) trial having 19 entries. This trial was conducted at the Panhandle Research and Extension Center (PREC) in Scottsbluff.

Materials, Methods and Conditions

Soils were sandy loams; pHs were from 5.6 to 7.9, and organic matter content was between 1 and 2.5%. The ranges of major fertilizers were 180 to 330 lb N/ac, 90 to 180 lb P/ac, 0 to 350 lb K/ac and 0 to 80 lb S/ac. At some locations, boron, magnesium and/or zinc were also added. Seed pieces were cut, treated with TOPS MZ and stored for seven to 30 days at 55 F. Growers used their conventional practices. Insecticides were Thimet applied at planting and, depending on location, post-emergence applications of Asana, Monitor, Provado, and DiPel. Depending on location, Turbo, Prowl plus Lexone were applied pre-emergence or at hilling and Poast was applied post-emergence for grasses. At Scottsbluff, no pre-emergence herbicide was applied; two applications of Eptam plus Matrix were applied in June. Besides the seed treatment, Bravo, Dithane, Curzate M-8 were used for early and late blight prevention. No fungicides were used at Scottsbluff. Vines were desiccated with Diquat. In Scottsbluff, vines were allowed to die from late blight in order to take susceptibility readings.

The trial design was 20-60 foot strip plots from which a section was harvested. The North Central Regional Trial was conducted as three replicate plots of 20 seedpieces. The key growth dates for all trials are listed in Table 1. Trials were conducted under overhead sprinkler irrigation. Rainfall and relative humidity tended to be below normal except mid-July to mid-August and, in most locations at the end of May. Temperature was normal.

Yield data were taken on tubers under 1 7/8 in, between 1 7/8 and 4 in, and over 4 in size. Within two weeks after harvest, tuber defects and specific gravities on 1 7/8 to 4-

inch tubers were determined visually and using a hydrometer, respectively. Fry color of entries were measured using the SFA/PC color chart. Color was determined following curing.

Nebraska Table 1. Key dates for each trial in 1997.

	IM	KE	ON	SB
P	4/16	5/1	5/1	5/14
D	9/5	9/7	9/20	9/9
H	9/17	10/14	10/1	9/26
days:				
P to D	142	130	143	118
IM=Imperial,KE=Kearney,ON=O'Neill,SB=Scottsbluff				
P=planting,D=desiccation,H=harvest.				

Results and Discussion

YIELDS: The highest yields (>400 cwt/a average of three locations) were white entries: Snowden, CalWhite, ATX85404-8, Ptarmigam¹ and MN15622; russet entries: AO82-611-7 and Russet Norkotah St. #8²; red entries: Ruby Gold¹ and Dark Red Norland, and Yukon Gold¹.

SPECIFIC GRAVITY: Most white entries had average specific gravities above 1.080. W1313 averaged the highest (1.092). The high yielders, CalWhite and Ptarmigam, had relatively very low specific gravities. Among russet entries, most had a specific gravity above 1.075 with AO82-611-7 having the highest (1.084). The specific gravity among the red entries was scattered; NE8664 averaged highest (1.082). Yukon Gold's gravity was 1.081.

COOKING COLOR: Light colored chips (< 2 on chart) were produced from most white entries. Unacceptable color was observed from AF875-15, Shurchip, Ptarmigam, and CalWhite. (The latter two were high yielders.) CalWhite is probably best in the long-white, fresh market. Most russet entries' fry color was below 3. Russet Norkotah (regular) and W1151rus fried darker than Russet Burbank and were unacceptable.

TUBER DEFECTS: Entries in which the tubers had the following defects were:

Off-Shape (>10% @ 2 sites): Russet Burbank and Russet Norkotah strain #3 (CO);

Common Scab (>10% @ Scottsbluff): Atlantic, AF875-15, NE8644, and W1313 in Kearney; W1151rus; Redsen and NE8664, and Yukon Gold.

Black Scurf (>10% @ 2 sites): AF1433-4, ATX85404-8, NE8644, NE8810, and W1313; Russet Burbank and Russet Norkotah strains #3 and #8, and Yukon Gold.

Hollow Heart: Nearly all entries had less than 5%; NE8644 had 8% at Imperial.

Vascular Discoloration (>9% @ 1 site): Brador¹, CalWhite, Russet Burbank, Russet Norkotah strain #3, and NE8242.

Sprouting (>10% @ Imperial): CalWhite, Shurchip, AF875-15, and MN15622.

Greening (>9% @ Kearney): NE8810, NE8812 and NE8813.

LATE BLIGHT SUSCEPTIBILITY (Table 5): Brador is the only entry that showed tolerance of late blight. This cultivar was entered due to the recommendation of the breeder in New Brunswick, Canada, as being resistant to late blight and a standard for comparison. Those entries that seemed least susceptible to late blight were CalWhite, Snowden, AF1433-4, W1313, and Allegany among the other white entries. Among russets, Russet Nugget and Russet Norkotah #3 strain were least susceptible. Temagami, a Canadian red entry, also showed less susceptibility than other entries. Note that the late blight readings were visual plot estimates.

In the North Central Trial (Table 9), entries with the least late blight susceptibility were Snowden, MSB073-2 and MSB076-2, all white chippers. The MSB entries are from Michigan. Other North Central Trial data from Nebraska are in Tables 7 and 8.

¹ Canadian cultivars ² Colorado strain

Nebraska Table 2. Imperial -- yield and tuber quality of potato entries, 1997.

Entries	Total Yield cwt/a	>2in. Yield cwt/a	Specific Gravity	Fry Color ¹ SFA/PC	% Defects and Type ²
white-skinned					
Atlantic	433	415	1.090	1	6 BS, 2 CS, 4 HH, 3 OS
CalWhite	415	384	1.070	5	5 OS, 10 SP, 25 VD
Novachip	573	555	1.080	1	3 BS, 2 OS
Ptarmigam	534	519	1.070	3	3 OS
Shurchip	357	293	1.070	4	8 OS
Snowden	671	653	1.087	1	35 BS, 2 HH, 3 OS, 25 SP
AF1433-4	378	354	1.088	1	28 BS, 3 OS, 5 SP
AF875-15	427	403	1.086	3	2 OS, 12 SP
ATX85404-8	610	380	1.087	1	1 OS, 5 SP
BCO894-2	393	354	1.070	1	1 OS
MN15622	555	549	1.092	2	2 HH, 6 OS, 60 SP
NDO1496-1	567	543	1.095	1	3 GR, 1 HH, 1 OS
NE8644	458	427	1.085	1	10 BS, 7 CS, 8 HH, 4 OS
NE8810	503	458	1.085	1	10 BS, 2 OS, 8 SP
NE8812	381	354	1.095	1	1 OS
NE8813	351	311	1.080	3	1 HH, 1 OS
W1242	512	494	1.080	1	8 BS, 5 OS
W1313	305	293	1.084	1	21 BS, 6 OS
russet-skinned					
Rus. Burbank	546	506	1.082	3	28 BS, 25 OS
Rus. Norkotah	467	439	1.080	3	8 OS
R. Norkotah #3	470	397	1.079	4	23 BS, 16 OS
R. Norkotah #8	512	488	1.077	3	4 BS, 9 OS
Rus. Nugget	281	256	1.077	3	27 BS, 3 OS
Ute Russet	217	189	1.075	3	14 BS, 10 OS
A81-386-1	540	506	1.075	2	9 OS
A81-473-2	256	244	1.080	3	2 HH, 5 OS
A84-95-1	384	366	1.080	3	3 BS, 1 OS
AO82-611-7	586	543	1.092	3	7 OS
W1151rus	573	543	1.075	4	5 OS
red-skinned					
D.Red Norland	445	433	1.060	4	5 BS, 3 OS
Redsen	424	384	1.070	2	5 BS, 5 OS
Ruby Gold	723	665	1.072	5	
NE8237	329	299	1.065	3	6 BS, 4 OS
NE8242	430	415	1.080	3	8 BS, 8 OS, 15 SP
NE8664	336	323	1.075	3	5 BS, 2 CS, 1 OS
yellow-fleshed					
Yukon Gold	543	525	1.078	3	2 HH, 3 OS, 5 SP
site means:	459	431	1.080		

¹ Fry color: 1 = lightest (equivalent to 65 or more on Agtron index scale) to
5 = darkest (equivalent to 25-34 on Agtron index scale).

² Defect Types: BS = black scurf, CS = common scab, HH = hollow heart,
OS = off-shape, SB = sunburn, SP = sprouting (heat), VD = vascular discolor.

Nebraska Table 3. Kearney & O'Neill -- yield and tuber quality of potato entries, 1997.

Entries	Total Yield cwt/a	>2in. Yield cwt/a	Specific Gravity	Fry Color ¹ SFA/PC	% Defects and Type ²
white-skinned ^K					
Atlantic	429	405	1.088	1	6 BS, 3 CS, 1 HH, 2 OS
CalWhite	678	643	1.070	5	2 CS, 5 OS, 4 VD
Novachip	348	340	1.076	1	3 BS, 5 CS, 4 GR, 5 OS
Ptarmigan	488	475	1.070	3	3 CS, 3 OS, 4 SP
Shurchip	389	367	1.070	1	15 BS, 8 OS
Snowden	629	605	1.086	1	3 CS, 3 OS
AF1433-4	342	319	1.070	1	10 BS, 6 CS, 6 OS
AF875-15	405	383	1.080	2	5 BS, 2 CS, 3 GR, 2 OS
ATX85404-8	567	551	1.079	1	10 BS, 3 CS, 3 OS
BCO894-2	332	308	1.070	1	9 BS, 3 CS, 3 OS
MN15622	464	454	1.075	1	7 CS, 7 OS
NDO1496-1	432	421	1.086	1	2 BS, 1 CS, 1 OS
NE8644	338	319	1.073	1	7 BS
NE8810	424	394	1.078	1	18 BS, 6 SC, 10 GR + SP, 6 OS
NE8812	321	297	1.086	2	3 BS, 2 CS, 12 GR, 2 OS
NE8813	392	362	1.080	1	2 CS, 15 GR, 2 HH, 2 OS
W1242	378	373	1.084	1	2 CS, 2 OS
W1313	424	400	1.093	1	15 BS, 14 CS, 6 OS
russet-skinned ^O					
Rus. Burbank	.	464	1.082	3	26 BS, 9 OS
Rus. Norkotah	.	450	1.081	3	2 OS
R. Norkotah #3	.	247	1.079	4	15 BS, 7 OS
R. Norkotah #8	.	522	1.077	3	25 BS, 3 OS
Rus. Nugget	.	276	1.078	3	12 OS
Ute Russet	.	334	1.076	3	1 HH, 3 OS
A81-386-1	.	479	1.077	2	3 OS
A81-473-2	.	493	1.080	3	3 HH, 15 OS
A84-95-1	.	218	1.080	3	1 OS
AO82-611-7	.	667	1.084	3	1 HH, 5 OS
W1151rus	.	334	1.077	4	1 OS
red-skinned ^O					
D.Red Norland	.	464	1.066	4	4 OS
Redsen	.	290	1.077	2	2 OS
Ruby Gold	.	681	1.076	5	4 OS
NE8237	.	174	1.071	3	1 OS
NE8242	.	420	1.075	3	2 HH, 5 OS
NE8664	.	377	1.084	3	29 BS, 9 CS, 3 OS
yellow-fleshed ^O					
Yukon Gold	.	681	1.078	3	10 BS, 8 CS, 3 HH, 3 OS
site means:	432 ^K	412 ^K 421 ^O	1.078		

¹ Fry color: 1 = lightest (equivalent to 65 or more on Agtron index scale) to 5 = darkest (equivalent to 25-34 on Agtron index scale).

² Defect Types: BS = black scurf, CS = common scab, HH = hollow heart, OS = off-shape, SB = sunburn, SP = sprouting (heat), VD = vascular discolor.

^K = at Kearney; ^O = at O'Neill

Nebraska Table 4. Scottsbluff -- yield and tuber quality of potato entries, 1997.

Entries	Total Yield cwt/a	>2in. Yield cwt/a	Specific Gravity	Fry Color ¹ SFA/PC	% Defects and Type ²
white-skinned					
Allegany	340	335	1.082	2	29 BS, 2 HH, 6 OS
Atlantic	367	351	1.085	1	19 CS, 2 HH, 2 OS
Brador	491	475	1.082	1	4 OS, 15 VD
CalWhite	535	513	1.075	3	21 BS, 5 CS, 11 OS, 7 VD
Novachip	297	281	1.082	1	5 CS, 6 OS, 10 SB
Ptarmigam	437	432	1.070	3	11 OS
Shurchip	389	367	1.070	3	1 HH, 14 OS, 1 VD
Snowden	400	389	1.080	1	7 CS, 3 OS
AF1433-4	351	335	1.080	1	5 BS, 2 CS, 3 OS, 4 VD
AF875-15	346	335	1.085	2	12 BS, 40 CS, 6 OS
ATX85404-8	346	329	1.075	1	18 BS, 6 OS, 11 SB
BCO894-2	270	259	1.070	1	8 BS, 2 CS
MN15622	313	302	1.086	2	4 CS, 8 OS
NDO1496-1	232	216	1.080	1	3 CS, 6 OS
NE8644	221	211	1.084	1	24 BS, 36 CS, 8 OS
NE8810	292	265	1.085	1	9 BS, 3 CS, 1 VD
NE8812	232	211	1.087	1	2 CS, 7 SB
NE8813	264	238	1.088	1	2 CS, 4 HH, 3 OS, 6 SB
W1242	319	313	1.085	1	5 CS, 7 OS
W1313	205	184	1.090	1	7 CS, 5 OS
russet-skinned					
Rus. Burbank	232	221	1.070	3	12 BS, 16 OS, 10 VD
Rus. Norkotah	270	259	1.070	2	10 OS
R. Norkotah #3	286	275	1.070	3	15 BS, 32 OS, 10 VD
R. Norkotah #8	340	329	1.070	2	36 BS, 11 OS, 5 VD
Rus. Nugget	70	70	.	2	4 BS
Ute Russet	59	59	.	3	1 HH
A81-386-1	119	119	1.070	2	6 BS, 10 OS
A81-473-2	81	81	.	2	2 OS
A84-95-1	97	97	1.075	2	4 OS
AO82-611-7	216	200	1.075	2	9 OS
W1151rus	184	167	1.070	2	4 BS, 30 CS, 3 OS
red-skinned					
D.Red Norland	367	346	1.070	2	1 OS
Redsen	324	302	1.080	2	33 CS
Ruby Gold	432	416	1.075	3	5 CS
Temagamy	356	335	1.070	2	14 BS, 2 CS, 3 OS, 1 VD
NE8237	113	108	1.070	2	4 BS
NE8242	205	200	1.075	2	6 CS, 1 VD
NE8664	238	216	1.088	2	18 CS, 3 HH, 5 OS, 1 VD
yellow-fleshed					
Yukon Gold	340	329	1.082	2	14 BS, 16 CS, 6 OS 1 VD
site means:	278	265	1.078		

¹ Fry color: 1 = lightest (equivalent to 65 or more on Agtron index scale) to 5 = darkest (equivalent to 25-34 on Agtron index scale).

² Defect Types: BS = black scurf, CS = common scab, HH = hollow heart, OS = off-shape, SB = sunburn, SP = sprouting (heat), VD = vascular discolor.

Nebraska Table 5. Late Blight Relative Susceptibility Readings Taken at Scottsbluff, 1997.

Entries	Late Blight Readings: 0 = none, 5 = all dead		
	August 25	August 28	September 10
white-skinned			
Allegany	½	1	3½
Atlantic	1½	2½	4½
Brador	0	½	½
CalWhite	0	½	3
Novachip	2	1	5
Ptarmigam	4	5	5
Shurchip	2	5	4
Snowden	0	1	3
AF1433-4	3	2	3
AF875-15	3	2	5
ATX85404-8	2	4	3½
BCO894-2	3½	4	5
MN15622	3½	5	5
NDO1496-1	4½	5	5
NE8644	5	5	5
NE8810	5	5	5
NE8812	5	5	5
NE8813	4½	5	5
W1242	½	3½	4
W1313	1	2½	3
russet-skinned			
Rus. Burbank	½	2½	4
Rus. Norkotah	1	2	4½
R. Norkotah #3	½	½	3
R. Norkotah #8	½	3	3½
Rus. Nugget	2	1	2½
Ute Russet	½	1½	3
A81-386-1	4	5	5
A81-473-2	3	3½	4½
A84-95-1	3	½	4½
AO82-611-7	1	3	3½
W1151rus	½	1½	4
red-skinned			
D.Red Norland	2	½	5
Redsen	4	5	5
Ruby Gold	5	5	5
Temagamy	1½	1	3½
NE8237	3½	5	5
NE8242	5	5	5
NE8664	5	5	5
yellow-fleshed			
Yukon Gold	5	4	4½

NEW JERSEY

Melvin R. Henninger

Introduction

Trials were conducted at the Rutgers Agricultural Research & Extension Center in Upper Deerfield Township and The Snyder Research & Extension Farm near Pittstown. All plots were 21' long and 3' wide. Seedpieces were spaced at 9" for round types and 12" for long types. At the Rutgers Ag Res & Ext location, part of the nitrogen and all of the P_2O_5 and K_2O were applied before planting and disked in. Additional nitrogen was topdressed 5 weeks after planting to bring the total up to 150 lb/A. At the Snyder Farm 1000 lbs./A of 15-15-15 was broadcast and disked in before planting. At both sites, Dual and Sencor were applied shortly after planting and Matrex and Lexone after hilling.

The Upper Deerfield plots were harvested with a single-row mount commercial harvester modified for bagging. No attempt was made to recover any lost tubers caused by normal harvester operation. All plots were sized with a spool sizer and specific gravities were determined by the weight in air and water method. Chip color was done by Mr. Steve Molnar of Wise Foods five days after harvest.

The Snyder Farm plots were harvested with a single-row commercial potato digger. Round types were sized with a spool sizer, the long types were sized by weight, and specific gravities were determined by the weight in air and water method.

In 1997, planting was normal and growing conditions were cool early, hot and dry after June 1st. Rainfall was supplemented by many irrigations. At the Snyder Farm location in northern New Jersey, conditions were dry but somewhat cool and growth was very good. Ozone levels were high in early July and some varieties were damaged. Insects and diseases were not a limiting factor to growth.

To simplify above information, trade names of some products are used. No endorsement is intended, nor is criticism implied of similar products not named.

NJ Variety Table 1.

Yields, Specific Gravities, and Tuber Sizes for 24 Round White Potato Varieties, Harvested **Main Season** and Grown on a Sandy Loam Soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1997(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)		
						1	7/8	2 1/2		1	2	3 4 5
Atlantic	ne	393	343	142	1.084	91	58		4	9	33	43 14 0
NY103	ne	365	333	138	1.068	93	44		3	7	49	40 5 0
ND2471-8	ne	347	308	128	1.080	92	45		4	8	47	38 7 0
Katahdin	ne	345	306	127	1.070	93	51		5	7	42	44 7 0
B0766- 3	ne	343	293	121	1.080	92	50		7	8	41	44 7 0
Reba	ne	330	287	119	1.077	89	28		2	11	61	26 2 0
AF 875-15	me	351	285	118	1.080	92	37		12	8	55	29 8 0
NorValley	ne	337	279	116	1.075	88	27		6	12	61	23 4 0
AF1569- 2	me	318	273	113	1.074	91	45		5	9	46	36 9 0
Kennebec	ne	415	266	110	1.074	87	32		26	13	55	27 5 0
AF1437- 1	ne	349	266	110	1.057	84	16		9	16	67	16 0 0
AF1615- 1	ne	335	265	110	1.075	82	13		4	18	69	13 1 0
Itasca	ne	332	263	109	1.072	84	18		6	16	67	16 1 0
W 870	ne	312	261	108	1.086	93	43		10	7	49	35 9 0
NY102	ne	323	255	106	1.082	85	15		7	15	71	13 2 0
AF1769- 9	me	280	241	100	1.071	88	27		3	12	61	23 4 0
Superior	ne	288	241	100	1.072	90	24		7	10	66	22 2 0
B0564- 8	ne	299	238	99	1.074	85	23		7	15	62	19 4 0
AF1480- 5	ne	343	236	98	1.077	91	35		25	9	56	34 2 0
AF1714- 2	me	277	235	98	1.073	92	37		8	8	55	33 5 0
Yukon Gold	ne	270	232	96	1.076	90	31		5	10	60	27 4 0
AF1424- 7	ne	303	229	95	1.076	82	40		3	18	43	34 6 0
B0856- 4	ne	280	208	86	1.075	81	12		9	19	69	11 1 0
AF1771- 1	me	284	190	79	1.065	85	20		23	15	66	16 4 0
Grand Mean		326	264		1.075	88	32		8	11	56	27 5 0
CV (4)		14	17		.21	5	24					
W-D Bayes LSD.05		72	73		.003	8	10		7	8	8	9 5 ns

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/11, and harvested on 8/11.

(2) me = University of Maine Breeding Program, ne = Northeast Regional Project.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 2. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1997 (1).

Variety	PLANT			TUBER CHARACTERS								TUBER DEFECTS							OVER		Comments	
	A	A	P	M	S	S	C	T	S	D	A	S	G	C	S	H	H	N	R	CC		ALL
Atlantic	7	7		6	5	7	7	6	2	8	7	9	9	9	9	5	33	6		5	std	hh hn
NY103	6	5		6	7	8	7		3	7	8	9	9	9	9	1	9	6		4	yes	hn
ND2471-8	7	6		6	7	8	8		2	8	8	9	9	9	9	0	0		3	yes	good chipper	
Katahdin	7	7		8	2	8	8		2	6	7	8	7	7	0	0	5	8		std	good	
B0766- 3	6	7		8	5	8	7		2	8	7	7	9	7	0	0			yes	small		
Reba	6	6		6	7	8	8		2	6	7	9	9	9	9	2	3	8		3	yes	hh
AF 875-15	6	6		6	7	8	7		2	6	8	8	9	9	9	0	1	8		yes		
NorValley	6	5		6	7	8	8		3	7	7	7	9	9	9	0	2	7		yes	low gravity	
AF1569- 2	5	7		6	7	8	8		2	8	8	9	9	9	9	0	18	7		4	yes	nice
Kennebec	8	8		8	3	8	8		4	6	6	4	9	7	0	3	8		ck	knobby		
AF1437- 1	6	6		6	4	7	6		2	6	7	5	9	9	0	1	8		no	knobby		
AF1615- 1	8	8		8	3	7	7		3	7	8	7	9	9	9	0	0		ok	small		
Itasca	6	5		6	6	8	7		4	6	7	9	9	9	9	0	0		5	ok	small	
W 870	7	7		7	5	8	7		3	3	6	7	9	9	9	4	5	8		5	yes	grower trial
NY102	6	3		5	6	8	8		2	5	7	9	8	9	0	0			4	ok	small	
AF1769- 9	4	4		5	7	8	7		3	7	7	7	7	9	0	4	8		no	some green		
Superior	5	5		4	9	7	6		3	7	7	9	9	9	0	0			5	ck		
B0564- 8	6	7		7	9	7	7		2	7	8	7	9	9	9	0	0		ok	small		
AF1480- 5	6	4		6	7	7	6		3	7	7	5	9	7	7	6	17	7		5	no	knobby hh
AF1714- 2	4	2		5	7	8	8		3	7	7	7	9	9	9	0	2	8		no		
Yukon Gold	6	4		5	5	8	7		2	7	7	7	9	7	0	1	7		ok	nice yel fl		
AF1424- 7	5	5		4	3	8	8		2	5	6	8	9	9	0	1	8		no	low yield		
B0856- 4	6	6		5	8	8	7		4	6	6	7	9	8	0	0			5	no		
AF1771- 1	5	5		7	5	8	8		3	6	6	3	6	6	0	2	8		no	knobby		

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.
(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 3.

Yields, Specific Gravities, and Tuber Sizes for 24 Round White Potato Varieties, Harvested **Main Season** and Grown on a Sandy Loam Soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1997(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
NY112	ny	432	385	185	1.080	93	57	4	7	36	47	10	0	
NY 84	ny	404	366	176	1.073	93	49	3	7	44	41	8	0	
Snowden	cf	396	354	170	1.087	90	29	1	10	61	28	1	0	
B1214-7	cf	388	326	157	1.084	96	62	12	4	34	43	19	0	
NY P21-2	ny	353	316	152	1.074	93	44	4	7	50	39	5	0	
NY110	ny	332	301	145	1.077	94	55	3	6	39	46	9	0	
B1065-51	cf	330	300	144	1.073	95	57	4	5	37	52	5	0	
Atlantic	ne	335	298	143	1.088	91	50	3	9	41	44	6	0	
B1066-73	cf	368	297	143	1.084	90	40	10	10	49	35	6	0	
Atlantic	cf	327	294	141	1.089	93	53	3	7	40	43	10	1	
NY E11-45	ny	337	287	138	1.066	87	21	3	13	67	19	2	0	
NY 87	ct	310	279	134	1.081	92	35	2	8	56	30	5	0	
NY Q 3-12	ny	333	274	132	1.082	92	51	11	8	41	35	15	1	
B0178-34	cf	320	270	130	1.092	90	41	6	10	49	36	5	0	
B0564-9	cf	299	270	130	1.074	93	60	3	7	33	40	20	0	
B1110-11	cf	296	250	120	1.081	92	48	7	8	44	37	10	1	
NY109	ny	274	246	118	1.069	92	33	3	8	59	31	2	0	
NY115	ny	265	234	112	1.078	92	37	4	8	55	33	4	0	
B0564-8	cf	303	232	112	1.076	84	26	9	16	58	26	0	0	
Superior	ct	244	217	104	1.070	93	29	5	7	65	27	2	0	
St. Johns	ct	257	209	100	1.067	93	50	12	7	43	39	11	0	
Superior	cf	248	208	100	1.073	90	26	7	10	64	25	2	0	
Superior	ne	218	193	93	1.066	92	22	4	8	70	21	1	0	
NY P63-1	ny	224	192	92	1.087	89	42	4	11	48	34	7	0	
Grand Mean		316	275		1.078	92	42	5	8	34	35	7	1	
CV (4)		12	13		.36	2	19							
W-D Bayes LSD.05		52	49		.005	3	11							
								5	3	10	10	5	ns	

- (1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/11, and harvested on 8/12.
- (2) cf = USDA Chapman Farm, ct = Certified, ne = NE Regional Project, ny = Cornell Program.
- (3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.
- (4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 4. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1997 (1).

Variety	PLANT				TUBER CHARACTERS								TUBER DEFECTS								OVER		Comments
	A		P		S	C	T	S	D	A	S	G	C	S	H	H	N	R	CC	ALL			
	A	P	M	t	S	C	T	S	D	A	S	G	C	S	H	H	N	R	CC	ALL			
NY112	8	7	8	8	4	7	7	2	8	8	9	9	9	9	0	0	8	7	5	yes	great		
Salem	7	6	8	8	6	8	7	3	7	7	9	9	9	9	0	0	15	7	4	yes	good fr market		
Snowden	7	7	8	8	3	7	6	2	8	8	9	9	9	9	1	1	12	6	3	yes	chipper only		
B1214-7	8	8	8	8	2	8	8	2	6	6	7	7	9	9	0	0	3	7	4	yes	big rough		
NY P21-2	7	6	6	7	7	7	6	2	7	7	7	9	6	6	0	0	6	7	3	ok	heat sprouts		
NY110	6	6	7	7	4	8	9	2	6	6	7	9	9	9	0	0	3	8	8	yes	did not chip		
B1065-51	6	6	5	6	6	7	5	3	6	7	9	7	9	9	0	0	9	7	6	yes	netted		
Atlantic	6	6	6	6	4	7	7	2	8	8	7	9	9	9	0	0	32	5	6	std	hn		
B1066-73	7	7	7	7	3	8	8	3	7	7	6	7	6	7	1	1	1	7	6	no			
Atlantic	6	6	6	6	5	7	7	2	8	8	9	9	9	9	5	5	33	6	5	std	hn		
NY E11-45	7	6	7	7	5	8	8	2	6	7	9	9	9	9	0	0	3	7	4	ok+	low gravity		
Reba	6	6	6	6	6	8	7	3	8	7	9	9	9	9	0	0	5	8	4	yes			
NY Q 3-12	5	7	6	6	5	7	7	2	8	7	9	9	9	9	0	0	1	8		yes			
B0178-34	7	6	7	7	5	8	7	2	6	6	6	9	9	9	1	1	1	8	3	yes	good chipper		
B0564-9	5	4	5	7	7	8	7	2	8	8	8	9	9	9	2	2	1	8	3	yes	nice one		
B1110-11	6	7	7	7	3	8	7	3	8	7	9	9	9	9	0	0	10	7		no	many air cr		
NY109	4	3	3	8	8	8	8	5	7	7	9	9	9	9	0	0	6	7		ok+	oblong		
NY115	5	6	4	7	7	8	8	2	7	7	9	9	9	9	0	0	10	7	3	ok	chipper		
B0564-8	6	7	6	8	8	7	6	2	8	7	7	9	8	8	0	0	0		2	ok+	small		
Superior	4	4	4	8	8	7	6	3	6	7	6	9	9	9	0	0	1	8		std			
St. Johns	6	7	7	5	8	9	9	3	6	7	7	9	9	9	0	0	0			ok			
Superior	5	5	4	9	9	7	6	3	6	7	7	9	9	9	1	1	1	8		std			
Superior	4	5	3	9	9	7	6	3	6	7	8	9	9	9	0	0	1	7	5	std			
NY P63-1	5	5	6	6	6	7	7	2	8	7	9	9	9	9	1	1	15	6		ok+	hn, low yield		

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.
 (2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 5.

Yields, Specific Gravities, and Tuber Sizes for 24 Round White Potato Varieties, Harvested **Main Season** and Grown on a Sandy Loam Soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1997(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
						1	7/8	2 1/2		1	2	3	4	5
B1425- 9	cf	343	301	166	1.082	90	34	3	10	57	31	3	0	
B1321-22	cf	397	289	160	1.085	89	35	16	11	54	27	8	0	
B1240-14	cf	320	287	159	1.085	95	50	5	5	45	46	4	0	
B1321-21	cf	340	287	159	1.083	91	50	7	9	41	43	6	0	
B1427- 1	cf	365	285	157	1.070	93	63	16	7	30	46	17	0	
Atlantic	ne	305	273	151	1.083	92	55	3	8	37	43	12	0	
B1406-10	cf	312	269	149	1.076	92	52	6	8	40	42	10	0	
B1415- 7	cf	297	262	145	1.079	94	56	6	6	38	41	15	0	
B1429-A3	cf	284	256	142	1.077	92	39	2	8	53	35	3	0	
B1083-51	cf	307	250	138	1.081	90	28	9	10	62	26	2	0	
B1206-10	cf	279	245	136	1.074	94	46	6	6	48	42	4	0	
B1240- 1	cf	268	244	135	1.085	96	68	7	4	28	50	18	0	
B1344-18	cf	280	240	133	1.079	91	33	5	9	57	29	4	0	
B1384-15	cf	305	238	132	1.070	89	47	12	11	43	36	10	0	
B1408- 3	cf	268	235	130	1.085	92	43	5	8	49	36	7	0	
B1414- 6	cf	283	221	122	1.074	93	59	17	7	34	37	21	0	
B1339-26	cf	280	218	121	1.077	85	25	8	15	60	23	2	0	
B1416- 2	cf	297	218	120	1.084	87	39	17	13	48	36	3	0	
B1418- 2	cf	289	205	113	1.076	83	26	15	17	57	26	0	0	
B1415- 5	cf	253	204	113	1.082	86	27	7	14	59	25	2	0	
B1342-21	cf	247	203	112	1.076	86	27	5	14	59	24	3	0	
B1414- 2	cf	243	194	107	1.074	89	31	11	11	58	27	4	0	
Superior	ct	207	181	100	1.072	91	25	3	9	65	25	0	0	
B1375-14	cf	224	176	97	1.077	84	23	8	16	61	21	2	0	
Grand Mean		291	241		1.078	90	41	8	10	49	34	7	0	
CV (4)		14	15		.22	3	20							
W-D Bayes LSD.05		57	54		.003	4	11	8	4	8	10	7	ns	

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/11, and harvested on 8/11.

(2) cf = USDA Chapman Farm, ct = Certified, ne = NE Regional Project.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 6. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1997 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER		Comments	
	A	A	P	M	S	C	T	S	D	A	S	G	C	H	H	H	N	R	CC		ALL
B1425- 9	6	4		6	7	7	6	2	7	8	9	9	9	9	0	0			5	yes	nice yellow fl
B1321-22	6	6		6	5	7	6	2	8	8	7	7	8	0	20	6			3	ok+	hn
B1321-21	7	7		7	6	7	7	2	6	8	7	7	6	0	13	8			4	ok	heat sprout
B1240-14	7	7		7	3	8	7	3	6	7	8	8	9	2	14	7			4	yes	nice hh hn
B1427- 1	6	5		6	6	7	6	2	7	5	6	8	7	3	9	7			6	ok	knobby hh
Atlantic	6	6		6	6	7	6	2	7	7	7	9	9	0	37	5			5	std	hn
B1406-10	7	6		7	4	7	6	2	7	6	8	7	7	0	32	6				no	hn
B1415- 7	6	7		7	3	8	7	3	7	8	9	8	9	0	27	6				no	hn
B1429-A3	6	6		6	3	7	7	3	6	6	8	9	9	0	3	8				ok+	
B1083-51	6	5		6	7	8	8	3	6	7	7	9	9	0	1	8				no	air cr
B1206-10	6	5		6	6	8	7	3	6	7	9	7	8	0	28	6			5	no	hn
B1240- 1	7	6		8	5	8	8	2	8	9	9	9	9	2	0				4	yes	very nice
B1344-18	5	3		5	6	7	7	2	7	7	7	7	9	1	20	7				ok	many defects
B1384-15	6	5		6	8	7	6	5	6	5	6	6	9	0	8	7				no	many defects
B1408- 3	6	7		7	7	7	6	2	8	8	8	7	9	0	30	6				no	hn
B1414- 6	6	6		6	3	8	7	2	6	5	6	6	8	0	20	6				no	hn
B1339-26	5	6		4	6	7	7	4	7	5	7	8	9	0	5	7				ok	poor appearance
B1416- 2	7	7		7	6	7	8	2	7	6	6	8	8	0	10	7			3	ok?	knobby
B1418- 2	6	5		6	5	8	8	3	6	5	6	6	6	0	22	7				no	many defects
B1415- 5	5	6		5	6	7	6	3	6	6	7	7	9	0	13	7				no	small
B1342-21	6	6		6	4	8	7	3	6	5	9	9	9	0	14	7				no	poor appearance
B1414- 2	6	5		6	2	8	8	5	5	5	8	9	9	0	9	7				no	small
Superior	5	4		4	9	7	6	3	5	7	8	9	9	0	0			5		std	
B1375-14	4	4		3	6	7	6	2	7	6	9	9	9	0	1	8				no	low yield

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.
 (2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 7.

Yields, Specific Gravities, and Tuber Sizes for 24 Round White Potato Varieties, Harvested **Late Season** and Grown on a Sandy Loam Soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1997(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
						1	7/8	2 1/2		1	2	3	4	5
Salem	ny	511	459	150	1.059	94	62	4	6	31	38	24	0	
B1240-1	cf	502	459	149	1.068	97	80	6	3	17	36	45	0	
NY112	ny	464	434	141	1.063	96	71	3	4	24	39	33	0	
Snowden	ne	458	432	141	1.069	95	50	1	5	45	38	12	0	
Katahdin	ne	458	430	140	1.055	97	68	3	3	29	42	27	0	
ND2471-8	ne	446	405	132	1.070	95	54	5	5	41	44	10	0	
B0856-4	cf	434	397	129	1.056	94	53	2	6	40	38	16	0	
B0564-9	cf	428	394	128	1.065	96	70	4	4	25	41	29	0	
Kennebec	ne	483	386	126	1.064	94	54	15	6	40	35	19	0	
Atlantic	ne	419	386	126	1.071	95	65	3	5	30	41	24	0	
W 870	ne	400	361	118	1.073	95	61	5	5	34	41	19	0	
B1321-22	cf	402	359	117	1.069	93	59	6	7	35	37	22	0	
B0564-8	cf	406	355	116	1.062	90	43	3	10	47	35	7	0	
B0766-3	ne	367	332	108	1.065	95	62	5	5	33	40	22	0	
B1416-2	cf	370	332	108	1.073	94	63	6	6	31	44	18	0	
Reba	ct	334	313	102	1.065	95	61	3	5	34	35	26	0	
Superior	ne	342	307	100	1.062	95	47	6	5	48	39	8	0	
B0178-34	cf	347	303	99	1.074	95	63	8	5	32	42	21	0	
St. Johns	ct	372	293	95	1.062	97	76	18	3	21	29	47	0	
Reba	ne	318	287	93	1.064	91	38	1	9	53	28	9	0	
NorValley	ne	338	281	92	1.061	90	37	8	10	53	28	9	0	
B1206-10	cf	309	272	89	1.063	95	63	7	5	32	39	23	0	
Quaggy Joe	ne	322	272	88	1.061	89	35	7	11	54	27	8	0	
AF1714-2	me	291	256	83	1.067	94	60	7	6	33	44	16	0	
Grand Mean		396	354		1.065	94	58	6	6	36	38	21	0	
CV (4)		21	23		.31	2	13							
W-D Bayes LSD.05		143	142		.004	3	10	5	3	9	8	11	ns	

- (1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/10, and harvested on 9/16.
- (2) cf=USDA Chapman Farm, ct=Certified, me=Maine, ne=NE Regional Project, ny=Cornell Program.
- (3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.
- (4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 8. Plant and Tuber Characters, Tuber Defects, and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1997 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER ALL	Comments
	A P	A P	M t	S S	C l	T x	S h	D p	A p	S G	G C	H S	H C	H N	R				
Salem	7	6	7	9	8	7	3	7	8	8	9	9	0	4	5	yes	good fr market		
B1240- 1	8	8	8	8	7	6	3	7	7	5	7	9	5	5	6	yes	hn hh		
NY112	8	7	7	9	6	5	3	7	6	1	9	9	1	11	5	ok	hn, low gravity		
Snowden	8	7	7	9	7	6	2	8	8	0	9	9	0	7	5	yes	hn		
Katahdin	7	7	8	9	8	7	2	7	8	1	7	9	1	11	6	std	hn, good yield		
ND2471-8	6	6	5	8	8	7	2	8	8	0	8	8	0	0		yes	nice one		
B0856- 4	6	6	5	8	8	8	2	7	8	0	9	9	0	0		yes			
B0564- 9	6	6	5	8	7	6	2	6	7	0	7	9	0	2	7	yes			
Kennebec	8	8	7	7	8	8	5	3	4	0	5	9	8	2	7	std	knobby		
Atlantic	7	7	7	9	6	5	2	8	8	1	9	9	1	33	4	std	hn		
W 870	7	7	7	7	8	6	2	3	6	4	9	9	4	5	7	ok	flat		
B1321-22	7	6	7	9	6	5	2	8	8	2	6	9	8	2	7	no	knobby		
B0564- 8	7	6	6	9	7	5	2	8	8	0	6	9	8	1	5	ok+	small		
B0766- 3	6	7	7	8	7	5	2	5	7	2	7	9	9	0		yes			
B1416- 2	7	6	7	9	7	6	3	6	6	2	7	8	9	7	6	no	hn		
Reba	7	7	7	8	8	7	3	7	8	2	9	9	9	0		yes			
Superior	5	4	4	9	7	5	3	5	7	0	7	9	9	0		std			
B0178-34	6	6	7	6	8	7	3	6	6	0	7	9	9	4	4	yes	low yield		
St. Johns	8	8	8	8	8	8	2	7	5	6	7	9	9	0		no	poor appearance		
Reba	7	6	7	9	8	7	3	6	7	0	9	9	9	0		yes			
NorValley	7	4	5	8	8	8	2	8	8	0	8	9	9	4	7	ok+	low yield		
B1206-10	5	6	6	9	7	6	4	6	6	2	8	6	9	22	5	no	hn		
Quaggy Joe	6	4	7	8	8	8	3	7	7	0	8	8	9	17	6	no	hn		
AF1714- 2	5	4	6	9	8	8	3	5	5	7	7	9	9	4	7	no	poor appearance		

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.
(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 9.

Yields, Specific Gravities, and Tuber Sizes for 8 Russet Potatoes Varieties, Harvested **Main Season** and Grown on a Sandy Loam Soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1997(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% Over		% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		4 oz	8 oz		1	2	3	4	5
B9922-11	cf	199	176	109	1.075	93	28	4	7	64	28	0	0
Superior	ne	187	161	100	1.067	93	40	8	7	53	35	4	0
Norkotah	ne	219	149	93	1.071	72	4	6	28	68	4	0	0
B1004-8	ne	197	138	85	1.070	72	2	4	28	71	2	0	0
Century	ne	279	134	84	1.075	66	2	27	34	64	2	0	0
Ranger	ct	190	126	78	1.072	76	3	13	24	74	3	0	0
BelRus	cf	170	126	78	1.077	79	5	6	21	74	5	0	0
W1099Rus	ne	298	85	53	1.058	59	0	53	41	59	0	0	0
Grand Mean		217	137		1.071	76	10	15	24	66	10	1	0
CV (4)		15	19		.24	6	61						
W-D Bayes LSD.05		46	40		.004	6	8	7	6	10	9	2	ns

- (1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 12", planted on 4/11, and harvested on 8/12.
- (2) cf = USDA Chapman Farm, ct = Certified, ne = NE Regional Project.
- (3) Size 1 = Under 4 oz, S2 = 4 to 8 oz, S3 = 8 to 12 oz, S4 = 12 to 16 oz, and S5 = Over 16 oz.
- (4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 10. Plant and Tuber Characters, Tuber Defects, and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1997 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER	
	A	A	P	M	S	S	C	T	S	D	A	S	G	H	S	H	H	ALL	Comments
	p	p	p	t	s	s	l	x	h	p	p	G	C	S	S	H	N	R	
B9922-11	6	6	6	7	7	7	5	3	6	5	6	6	8	7	7	1	6	7	ok+
Superior	4	5	6	3	7	7	6	6	3	6	7	8	8	9	9	0	0	std	irregular
Russet Norkotah	6	6	6	5	8	5	5	3	8	6	7	7	9	7	7	0	1	8	poor superior
B1004- 8	6	6	6	6	7	7	5	4	6	7	6	8	8	8	8	9	10	7	yes
																			ok for NJ
																			no
																			hh hn
Century Russet	7	6	6	7	7	7	7	7	8	6	4	5	9	9	9	1	0		yes
Ranger Russet	6	6	6	7	7	7	5	3	8	7	6	6	6	9	9	0	5	8	ok
BelRus	5	6	6	7	7	7	5	3	5	7	6	6	9	9	9	0	27	6	no
W1099Rus	6	6	6	6	6	6	5	3	8	5	4	1	1	7	7	0	0		no
																			knobby
																			gr. cr.

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 11.

Yields, Specific Gravities, and Tuber Sizes for 152 Round White Potato Varieties, Harvested Main Season and Grown on a Sandy Loam Soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1997(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
AF1791-1	me	427	331	168	1.066	78	47	18	18	4	31	39	7	0
AF1791-1	me	440	396	201	1.064	90	63	6	6	3	27	44	19	0
AF1808-9	me	170	134	68	1.065	79	16	10	10	11	63	16	0	0
AF1808-18	me	271	220	112	1.074	81	21	10	10	8	60	21	0	0
AF1811-6	me	159	91	46	1.068	57	0	11	11	32	57	0	0	0
AF1826-5	me	260	174	88	1.067	67	2	13	13	20	65	2	0	0
AF1828-1	me	257	191	97	1.082	74	5	9	9	16	69	5	0	0
AF1838-3	me	252	200	101	1.065	79	21	10	10	11	58	19	2	0
AF1845-3	me	413	288	146	1.058	70	31	24	24	6	38	28	4	0
AF1852-3	me	201	151	77	1.066	75	10	4	4	21	65	10	0	0
AF1856-1	me	355	333	169	1.080	94	68	3	3	3	26	39	23	5
AF1857-2	me	319	274	139	1.081	86	22	6	6	8	64	22	0	0
AF1864-2	me	213	154	78	1.059	72	25	10	10	18	47	23	2	0
AF1864-36	me	248	180	92	1.069	73	4	4	4	24	69	1	2	0
AK10-57-19-5me		95	9	5	1.072	9	0	39	39	51	9	0	0	0
B0984-1	cf	270	104	53	1.075	39	3	11	11	51	35	3	0	0
B0985-1	cf	84	60	31	1.056	72	8	2	2	26	64	8	0	0
B1065-64	cf	298	240	122	1.069	81	14	4	4	15	66	14	0	0
B1066-51	cf	351	211	107	1.074	60	30	29	29	11	30	29	1	0
B1070-88	cf	335	203	103	1.076	61	4	12	12	28	56	4	0	0
B1072-21	cf	328	305	155	1.068	93	60	3	3	4	33	42	19	0
B1091-29	cf	284	258	131	1.078	91	46	3	3	7	45	43	3	0
B1298-16	cf	205	184	93	1.062	90	37	1	1	9	53	33	3	0
B1343-5	cf	111	64	32	1.082	57	48	33	33	10	9	34	15	0
B1343-8	cf	275	234	119	1.086	85	27	3	3	12	58	27	0	0

NJ Variety Table 11.

(Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
B1344-5	cf	311	221	112	1.075	71	35	22	22	7	36	30	5	0
B1347-4	cf	215	178	90	1.088	83	36	6	6	11	47	36	0	0
B1351-8	cf	336	263	133	1.084	78	39	12	12	9	40	31	8	0
B1352-10	cf	285	215	109	1.079	75	13	10	10	15	62	13	0	0
B1354-6	cf	319	196	100	1.072	62	31	31	31	8	30	25	6	0
B1354-10	cf	333	225	114	1.070	67	19	12	12	21	48	19	0	0
B1357-2	cf	292	241	122	1.086	83	18	5	5	12	64	18	0	0
B1358-7	cf	260	173	88	1.087	66	38	8	8	26	29	31	6	0
B1361-5	cf	240	217	110	1.060	90	40	1	1	9	51	38	1	0
B1361-9	cf	64	51	26	1.080	80	60	12	12	9	19	48	12	0
B1361-10	cf	167	107	55	1.086	64	22	14	14	22	43	22	0	0
B1361-11	cf	364	187	95	1.080	51	15	40	40	9	37	15	0	0
B1362-7	cf	296	207	105	1.071	70	42	24	24	6	28	34	8	0
B1362-9	cf	428	277	140	1.066	65	45	32	32	4	20	31	14	0
B1363-1	cf	400	372	189	1.071	93	64	4	4	3	29	50	14	0
B1363-4	cf	243	223	113	1.064	92	58	4	4	4	34	45	13	0
B1363-10	cf	218	151	77	1.074	70	2	3	3	28	68	2	0	0
B1365-5	cf	277	202	102	1.080	73	34	22	22	5	39	26	7	0
B1366-5	cf	188	166	84	--	88	55	8	8	4	33	48	7	0
B1367-3	cf	180	147	74	1.081	82	40	8	8	11	42	32	7	0
B1367-12	cf	180	127	65	1.070	71	7	4	4	25	64	7	0	0
B1370-8	cf	241	206	105	1.087	85	22	0	0	15	63	22	0	0
B1427-4	cf	305	250	127	1.091	82	41	6	6	12	41	38	2	0
B1429-A6	cf	295	262	133	1.078	89	36	1	1	10	53	28	8	0
B1435-9	cf	287	191	97	1.056	67	35	17	17	16	31	33	2	0
B1435-15	cf	355	321	163	1.076	90	58	4	4	5	32	39	20	0
B1435-23	cf	237	161	82	1.073	68	21	20	20	12	47	17	4	0
B1435-37	cf	272	238	121	1.078	88	30	0	0	12	58	30	0	0
B1438-21	cf	315	270	137	1.084	86	36	7	7	7	50	27	9	0
B1440-6	cf	290	216	110	1.069	75	5	1	1	25	69	5	0	0

NJ Variety Table 11. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber			Sizes (3)		
						1	7/8	2 1/2		1	2	3	4	5	
B1440-8	cf	289	173	88	1.063	60	5	5	10	31	55	5	0	0	
B1440-10	cf	326	210	107	1.074	65	11	11	4	31	54	11	0	0	
B1440-12	cf	290	232	118	1.074	80	30	30	9	11	50	30	0	0	
B1440-18	cf	411	391	198	1.066	95	49	49	0	5	46	39	10	0	
B1441-3	cf	200	136	69	1.061	68	8	8	6	27	60	8	0	0	
B1445-7	cf	241	209	106	1.073	87	36	36	1	12	51	32	4	0	
B1445-8	cf	299	240	122	1.071	80	23	23	6	14	57	23	0	0	
B1445-11	cf	203	174	88	1.082	86	22	22	3	11	63	16	6	0	
B1449-1	cf	241	205	104	1.074	85	29	29	6	9	56	29	0	0	
B1450-13	cf	315	141	72	1.041	45	9	9	39	16	36	9	0	0	
B1450-15	cf	274	218	111	1.074	80	36	36	10	11	44	24	12	0	
B1450-20	cf	391	179	91	1.059	46	11	11	35	19	35	10	1	0	
B1450-23	cf	341	263	134	1.059	77	39	39	14	9	39	33	5	0	
B1450-24	cf	356	192	97	1.075	54	5	5	10	36	49	5	0	0	
B1450-25	cf	440	249	126	1.060	57	13	13	28	15	44	13	0	0	
B1452-9	cf	382	304	154	1.069	80	36	36	12	9	43	34	2	0	
B1452-16	cf	420	313	159	1.067	75	38	38	16	9	36	30	9	0	
B1452-18	cf	429	353	179	1.067	82	27	27	9	9	55	26	1	0	
B1452-19	cf	333	259	131	1.084	78	19	19	6	17	59	18	1	0	
B1452-20	cf	353	194	98	1.056	55	9	9	31	15	46	9	0	0	
B1452-21	cf	201	186	94	1.067	92	64	64	1	6	29	39	25	0	
B1452-22	cf	427	344	175	1.066	81	27	27	8	11	54	27	0	0	
B1452-23	cf	270	179	91	1.060	66	8	8	13	21	59	8	0	0	
B1452-25	cf	339	201	102	1.061	59	3	3	13	28	56	3	0	0	
B1465-2	cf	169	74	38	1.056	44	9	9	19	37	35	9	0	0	
B1466-6	cf	318	268	136	1.060	84	23	23	1	15	61	23	0	0	
B1466-12	cf	104	66	34	1.062	64	11	11	0	36	53	11	0	0	
B1466-14	cf	259	131	67	1.076	51	7	7	19	30	43	7	0	0	
B1473-10	cf	225	184	93	1.072	82	26	26	11	7	55	22	4	0	
B1475-1	cf	264	212	108	1.078	80	37	37	3	16	43	34	3	0	

NJ Variety Table 11. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
B1477- 1	cf	286	251	127	1.077	88		29	3	9	59	29	0	0
B1477- 5	cf	284	172	87	1.064	61		13	14	25	48	13	0	0
B1478- 8	cf	251	190	97	1.070	76		27	10	14	49	27	0	0
B1479- 4	cf	251	185	94	1.077	74		10	7	19	64	10	0	0
B1481- 2	cf	301	223	113	1.068	74		31	10	16	43	29	2	0
B1569- 7	cf	229	154	78	1.064	67		7	8	24	60	7	0	0
B1582- 9	cf	257	178	90	1.078	69		13	16	15	57	13	0	0
B1582-10	cf	229	208	106	1.080	91		44	2	8	47	41	3	0
B1584-10	cf	272	184	93	1.085	68		30	19	14	38	30	0	0
B1585- 1	cf	223	193	98	1.073	86		24	1	13	62	24	0	0
B1585- 6	cf	215	175	89	1.082	81		16	3	16	65	16	0	0
B1585-11	cf	177	114	58	1.085	64		0	4	32	64	0	0	0
B1587- 6	cf	286	233	118	1.076	81		34	7	12	47	34	0	0
B1587-11	cf	254	201	102	1.070	79		12	7	13	67	11	1	0
B1588- 7	cf	154	109	55	1.079	71		7	5	24	64	7	0	0
B1589- 1	cf	91	11	6	1.080	12		0	0	88	12	0	0	0
B1590- 1	cf	89	30	15	1.063	34		0	2	64	34	0	0	0
B1590- 2	cf	229	118	60	1.064	51		0	10	38	51	0	0	0
B1590- 4	cf	218	77	39	1.062	35		5	30	34	30	5	0	0
B1590- 7	cf	89	50	26	1.079	57		3	2	41	54	3	0	0
B1591- 1	cf	246	105	53	1.082	43		2	41	17	41	2	0	0
B1592-13	cf	113	55	28	1.078	49		0	7	44	49	0	0	0
B1598- 4	cf	115	61	31	1.067	53		4	2	45	49	4	0	0
B1599- 6	cf	176	115	59	1.095	65		4	10	25	61	4	0	0
B1599- 7	cf	200	138	70	1.090	69		12	10	21	57	12	0	0
B1600-12	cf	260	236	120	1.075	91		28	3	6	63	28	0	0
B1601- 6	cf	284	202	102	1.068	71		7	9	20	64	7	0	0
B1603-11	cf	221	125	64	1.065	57		4	18	26	53	4	0	0
B1612- 2	cf	276	239	121	1.077	86		17	1	13	69	17	0	0
B1621- 3	cf	203	98	50	1.058	48		5	20	32	43	5	0	0

NJ Variety Table 11. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r		% Culls	% Tuber Sizes (3)			
						1	2 1/2		1	2	3	4 5
B1622- 1	cf	203	143	73	1.078	70	0	7	22	70	0	0
B1622- 3	cf	144	57	29	1.066	39	0	15	46	39	0	0
B1622- 5	cf	131	66	33	1.053	50	0	24	26	50	0	0
B1624- 4	cf	172	83	42	1.062	48	0	19	33	48	0	0
B1624- 7	cf	243	129	65	1.064	53	5	24	24	48	5	0
B1624- 8	cf	363	303	154	1.069	83	29	7	9	54	25	4
B1624- 9	cf	297	178	90	1.063	60	12	21	19	47	12	0
B1624-10	cf	374	243	124	1.067	65	27	25	10	38	25	2
B1624-22	cf	261	138	70	1.061	53	18	34	13	35	18	0
B1625- 6	cf	348	257	130	1.072	74	19	7	19	55	17	1
B1625- 9	cf	380	337	171	1.067	89	47	3	8	42	44	3
B1628- 5	cf	326	232	118	1.065	71	7	10	19	64	7	0
B1628-10	cf	183	149	75	1.075	81	12	11	8	69	12	0
B1629- 8	cf	204	136	69	1.077	66	4	15	19	62	4	0
B1631- 2	cf	221	166	84	1.068	75	10	3	22	65	10	0
B1635-11	cf	277	234	119	1.077	85	23	0	15	62	23	1
B1635-20	cf	316	282	143	1.051	89	26	0	11	63	26	0

NJ Variety Table 11. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)			
						1	7/8	2 1/2		1	2	3	4
NY P32-3	ny	252	231	117	1.082	92	55	1	7	37	49	6	0
NY Q 8-2	ny	301	268	136	1.081	89	52	3	8	37	46	6	0
NY R170-6	ny	310	265	134	1.069	85	20	2	13	66	20	0	0
NY R17-2	ny	260	218	111	1.059	84	43	11	5	41	41	2	0
NY R17-7	ny	382	336	171	1.067	88	37	2	10	51	37	0	0
NY R17-106	ny	295	223	113	1.067	76	31	12	12	45	28	3	0
NY R17-11	ny	203	185	94	1.062	91	52	1	8	39	48	4	0
NY R17-19	ny	193	162	82	1.069	84	11	7	9	74	6	5	0
NY R17-20	ny	239	201	102	1.078	84	17	4	12	68	15	1	0
NY R18-4	ny	324	193	98	1.064	60	7	22	18	52	7	0	0
NY R18-6	ny	289	230	117	1.065	79	49	9	11	31	45	3	0
NY R19-7	ny	145	126	64	1.059	87	80	5	8	7	69	11	0
NY R19-20	ny	254	219	111	1.068	86	22	2	12	64	22	0	0
NY R41-11	ny	302	254	129	1.067	84	35	1	15	49	35	0	0
NY R41-18	ny	430	404	205	1.064	94	72	2	4	22	55	17	0
Cherry Red	ne	297	245	124	1.074	83	8	1	16	74	8	0	0
NorDonna	ne	232	77	39	1.057	33	0	38	29	33	0	0	0
Norland DR	ne	243	151	77	1.058	62	11	21	17	51	11	0	0
Atlantic ck	ne	356	326	165	1.084	91	56	2	7	36	41	14	0
Superior ck	ne	226	197	100	1.066	87	28	4	10	58	28	1	0

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/11, and harvested on 8/11.

(2) cf = USDA Chapman Farm, ct = Certified, ne = NE Regional Project.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 12. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1997 (1).

Variety	PLANT			TUBER CHARACTERS								TUBER DEFECTS								OVER		Comments	
	A	A	P	M	S	S	C	T	x	h	p	A	S	G	C	S	H	H	N	R	CC		ALL
AF1791- 1	7	6	6	6	5	5	8	7	7	2	7	7	7	7	8	9	9	0	0			yes	good yield
AF1791- 1	6	6	6	6	4	4	6	7	7	2	8	7	7	8	7	9	9	0	0			yes	good yield
AF1808- 9	5	6	6	6	9	9	8	8	8	5	3	6	6	9	9	9	9	0	0			no	low yield
AF1808-18	5	5	5	5	3	3	7	7	7	7	7	5	5	9	9	8	0	0	0			ok	poor appearance
AF1811- 6	4	2	4	4	5	5	6	6	6	5	5	6	6	7	7	6	0	0	0			no	heat sprouts
AF1826- 5	5	4	5	5	2	2	8	8	8	6	7	6	6	6	9	9	9	0	0			no	knobby
AF1828- 1	7	8	8	8	4	4	7	6	6	6	5	5	5	7	7	9	0	0			no	defects	
AF1838- 3	6	4	5	5	6	6	8	8	8	5	6	7	7	9	9	8	1	1	7			ok	some green
AF1845- 3	8	8	8	8	5	5	8	8	8	4	5	6	6	5	6	6	0	0	0			ok	knobby
AF1852- 3	4	4	4	4	8	8	8	9	9	2	8	7	7	8	9	9	0	0	0			no	low yield
AF1856- 1	5	4	7	7	7	7	8	8	8	2	8	8	8	8	9	9	9	0	8	6		no	hn
AF1857- 2	6	7	7	7	7	7	8	7	7	3	7	7	7	8	8	9	0	0	2	7		yes	ok
AF1864- 2	4	4	4	5	7	7	8	7	7	3	7	7	7	7	9	7	0	0	0			no	heat sprouts
AF1864-36	5	5	5	5	5	5	7	6	7	3	7	7	7	7	9	9	0	0	0			no	low yield
AK10-57-19-5	7	7	7	7	7	7	2	7	7	2	7	5	5	6	9	7	0	0	0			special	pink flesh
B0984- 1	7	6	7	7	3	3	2	7	7	3	7	7	7	9	9	9	0	0			no	air cracks	
B0985- 1	3	2	2	2	8	8	2	7	7	2	7	7	7	6	9	7	0	0	0			no	knobby
B1065-64	4	4	4	5	6	6	6	5	5	3	6	5	5	7	9	9	0	0	0			no	air cracks
B1066-51	8	8	8	9	2	2	8	8	8	5	5	3	3	5	9	4	1	0	0			no	poor appearance
B1070-88	7	6	7	7	6	6	7	6	6	6	3	5	5	6	9	9	0	0	0			no	poor appearance
B1072-21	7	6	7	7	6	6	7	6	6	2	8	8	8	9	9	9	0	0	3	7	6	yes	nice appearance
B1091-29	6	6	7	7	6	6	7	7	7	2	7	7	7	8	9	9	0	0	3	6		ok	hn
B1298-16	3	2	6	6	7	7	8	7	7	2	7	7	7	9	9	9	1	0	0			no	low yield
B1343- 5	5	7	7	7	4	4	8	8	8	2	6	5	5	9	5	9	0	0	0			no	growth cracks
B1343- 8	5	6	6	6	5	5	8	7	7	3	7	7	7	8	9	9	0	0	1	8		ok+	ok

NJ Variety Table 12. (Continued.)

Variety	PLANT				TUBER CHARACTERS										TUBER DEFECTS										OVER ALL	Comments																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	A P P A				S C T S h p p										S G C S H H N R																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	4	5	7	6	4	7	5	4	7	6	8	8	7	3	5	7	5	8	8	8	9	9	9	9			9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

NJ Variety Table 12. (Continued.)

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER		Comments		
	A	P	A	M	S	S	C	T	S	D	A	S	G	C	S	H	H	N	R		CC	ALL
B1440-8	5	5		6	8	8	8	8	6	6	5	8	9	9	9	0	0				no	poor appearance
B1440-10	5	5		6	7	8	7	6	6	5	6	8	9	9	9	0	1	8			no	small
B1440-12	4	5		6	6	8	7	6	6	6	6	8	8	8	9	0	0			ok-	small	
B1440-18	5	7		6	6	8	8	8	3	6	6	9	9	9	9	0	0			yes	nice yield	
B1441-3	3	2		3	7	7	6	6	4	6	6	8	9	9	9	0	0			no	small	
B1445-7	5	6		7	5	8	8	8	4	7	7	9	9	9	9	0	0			ok-	air cracks	
B1445-8	6	5		7	7	8	7	7	2	5	6	6	9	9	9	0	0			ok-	knobby	
B1445-11	5	7		7	8	8	8	8	8	8	7	7	9	9	9	0	0			ok-	knobby	
B1449-1	3	5		6	5	7	7	7	5	3	4	3	9	9	9	0	2	7		no	knobby	
B1450-13	8	7		7	4	8	8	8	3	6	5	2	7	5	5	0	7	6		no	hn, heat sprouts	
B1450-15	8	6		7	5	8	7	7	3	5	5	3	7	3	3	2	2	9	6		no	hn, heat sprouts
B1450-20	7	6		6	6	7	6	6	7	6	4	4	5	5	9	0	10	5		no	hn, knobby	
B1450-23	7	6		6	5	7	6	6	5	6	5	5	5	6	6	0	8	6		no	hn, grow cracks	
B1450-24	7	6		6	5	8	8	8	7	7	3	3	7	3	3	0	5	5		no	hn, heat sprouts	
B1450-25	7	5		6	7	6	7	7	8	5	2	2	9	4	4	0	9	5		no	hn, knobby	
B1452-9	6	5		6	6	6	7	7	3	5	6	6	9	9	9	0	4	6		no	hn	
B1452-16	7	6		7	5	8	8	8	5	7	6	8	9	7	7	0	9	5		no	hn	
B1452-18	8	6		7	5	7	7	7	5	5	6	7	7	9	9	0	1	7		yes	yield, defects	
B1452-19	8	6		7	6	7	7	7	3	6	7	9	9	8	8	0	1	7		ok+	small	
B1452-20	7	5		7	2	7	7	7	6	6	3	2	9	4	4	4	2	6		no	knobby	
B1452-21	9	8		9	3	7	7	7	2	6	6	9	9	9	9	0	5	6		no	hn	
B1452-22	6	6		6	3	7	8	8	2	5	6	7	9	6	6	0	0			ok	heat sprouts	
B1452-23	4	5		4	3	7	8	8	2	5	6	7	9	4	4	0	0			no	heat sprouts	
B1452-25	6	7		7	6	7	7	7	5	6	5	3	9	4	4	0	1	6		no	knobby	
B1465-2	4	5		5	7	7	7	7	2	6	6	5	9	5	5	1	0			no	heat sprouts	
B1466-6	7	6		6	3	7	6	6	2	8	8	9	9	9	9	1	7	6		no	hn	
B1466-12	5	5		4	9	6	5	5	5	6	5	9	9	9	9	0	0			no	no yield	
B1466-14	6	6		6	7	7	6	6	6	7	4	3	9	5	5	0	1	8		no	knobby	
B1473-10	4	6		5	5	6	7	7	3	6	6	6	9	6	6	0	0			no	defects	
B1475-1	6	8		7	2	8	8	8	3	6	6	8	9	9	9	2	3	8		ok+	late	

NJ Variety Table 12. (Continued.)

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER ALL	Comments			
	A	P	P	M	S	C	T	S	D	A	S	G	C	S	H	H	H			N	R	CC
B1477-1	5	7		7	5	7	6	4	7	7	7	9	9	9	9	0	0	7	6		no	hn
B1477-5	4	7		7	6	7	7	6	6	6	6	5	9	5	9	0	0	0	0		no	heat sprouts
B1478-8	5	5		5	8	6	5	3	6	5	5	6	9	6	9	0	0	0	0		no	poor appearance
B1479-4	4	6		6	8	8	8	4	5	6	7	9	9	9	9	0	0	0	0		no	small
B1481-2	6	7		7	7	7	7	2	7	7	9	9	9	6	9	1	2	8		no	heat sprouts	
B1569-7	4	5		4	7	6	7	5	6	6	7	9	9	9	9	0	0	0		no	low yield, small	
B1582-9	6	5		6	2	8	8	2	7	6	3	9	9	3	9	0	0	0		no	heat sprouts	
B1582-10	5	6		6	2	8	8	2	8	8	9	9	9	9	9	0	9	5		no	hn	
B1584-10	7	7		7	4	8	8	3	8	5	5	9	9	6	9	0	0	0		no	knobby	
B1585-1	7	6		6	6	6	6	2	8	8	9	9	9	9	9	0	10	3		no	hn	
B1585-6	5	5		5	8	8	7	3	7	7	9	9	9	9	9	0	5	7		no	low yield	
B1585-11	4	6		6	7	8	7	3	7	7	9	9	8	9	9	2	1	6		no	low yield	
B1587-6	8	8		8	6	7	7	3	6	7	9	9	9	9	9	0	1	8		ok+	ok	
B1587-11	4	6		6	3	7	7	4	6	5	5	7	6	6	9	0	6	5		no	hn, knobby	
B1588-7	5	7		6	6	7	6	4	6	6	7	9	6	6	9	0	0	0		no	heat sprouts	
B1589-1	3	2		3	8	7	7	5	6	6	9	9	9	9	9	0	0	0		no	low yield	
B1590-1	3	4		3	9	7	7	2	6	6	8	9	9	9	9	0	0	0		no	low yield	
B1590-2	5	5		5	5	7	7	7	6	6	8	9	9	9	9	0	0	0		no	low yield	
B1590-4	5	7		6	5	7	5	7	7	4	5	6	6	6	9	0	2	6		no	hn, low yield	
B1590-7	2	2		3	8	7	6	5	6	6	9	9	9	9	9	0	0	0		no	low yield	
B1591-1	5	6		6	7	7	6	3	7	6	3	9	9	5	9	0	1	7		no	knobby	
B1592-13	1	1		1	9	8	8	2	7	6	8	9	9	9	9	0	1	8		no	low yield	
B1598-4	2	5		3	9	6	7	2	8	7	8	9	9	9	9	0	0	0		no	low yield	
B1599-6	3	5		5	4	7	8	2	8	7	6	9	9	9	9	1	0	0		no	low yield	
B1599-7	3	3		5	5	8	9	4	6	6	8	9	9	8	9	0	0	0		no	low yield	
B1600-12	3	4		6	5	8	8	5	6	7	7	9	9	9	9	0	2	6		ok	hn	
B1601-6	4	5		6	6	8	7	3	6	7	9	9	9	6	9	0	2	6		no	hn, heat sprouts	
B1603-11	4	6		4	4	8	7	3	6	5	7	9	9	9	9	0	10	4		no	hn	
B1612-2	5	5		4	4	8	8	2	8	8	9	9	9	9	9	2	2	6		ok+	hn	
B1621-3	3	3		3	8	7	6	5	6	5	7	6	3	6	9	0	3	6		no	heat sprout, hn	

NJ Variety Table 12. (Continued.)

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS					OVER ALL	Comments				
	A	A	P	M	S	C	T	S	D	A	S	G	C	S	H			H	N	R	CC
B1622-1	5	4		4	8	6	6	5	3	6	8	9	9	9	0	0				no	low yield
B1622-3	3	2		2	8	8	7	5	3	5	8	9	6	6	0	4	7			no	low yield
B1622-5	3	5		3	8	7	7	7	6	6	6	7	6	6	0	0			no	low yield	
B1624-4	2	3		3	8	8	7	7	6	4	7	9	6	6	0	1	6		no	hn	
B1624-7	4	5		5	7	7	6	3	6	6	5	9	9	9	0	8	6		no	knobby	
B1624-8	6	6		5	6	8	8	2	8	7	7	9	9	9	0	8	5		no	hn	
B1624-9	3	3		4	7	8	8	2	8	7	8	9	9	9	0	1	8		no	small	
B1624-10	4	3		5	7	7	7	3	6	5	6	9	9	9	0	0			no	knobby	
B1624-22	5	3		6	7	7	7	2	4	5	6	9	9	9	0	1	8		no	knobby	
B1625-6	5	6		6	5	8	7	3	4	6	7	7	7	9	0	0			no	small	
B1625-9	8	8		8	5	8	7	2	5	7	8	8	9	9	0	1	6		yes	hn	
B1628-5	6	6		7	6	8	7	6	5	6	6	9	9	9	0	1	8		no	small	
B1628-10	4	6		4	6	8	8	5	8	7	7	9	8	8	0	0			ok	no yield	
B1629-8	4	6		4	8	8	8	3	6	6	6	9	4	9	0	0			no	heat sprouts	
B1631-2	3	3		3	9	8	6	2	6	6	9	9	7	7	0	1	7		no	small	
B1635-11	6	7		7	1	7	6	2	4	6	9	7	9	9	0	1	7		ok+	small, late	
B1635-20	7	6		7	3	8	7	2	6	7	9	9	9	9	0	1	7		yes	small, late	

NJ Variety Table 12. (Continued.)

Variety	PLANT			TUBER CHARACTERS								TUBER DEFECTS						OVER		Comments		
	A	P	P	M	S	S	C	T	S	D	A	S	G	C	S	H	H	N	R		CC	ALL
NY P32- 3	4	7		6	3	3	8	8	2	6	8	9	9	9	9	0	0				yes	late
NY Q 8- 2	6	6		7	3	3	7	6	2	7	7	9	9	9	9	0	0				yes	late
NY R170-6	6	7		7	6		8	7	2	7	8	8	9	9	9	0	0				ok+	
NY R17- 2	7	5		5	7		8	8	1	8	7	9	9	9	9	0	1	8			no	air cracks
NY R17- 7	7	7		7	5		8	7	3	8	7	9	9	9	9	0	0				yes	small
NY R17-106	7	7		8	5		8	7	2	7	7	7	9	9	9	0	0				ok+	small, defects
NY R17-11	4	6		5	8		8	9	2	8	8	9	9	9	9	0	0				ok+	nice, loe yield
NY R17-19	5	6		5	4		8	7	3	6	7	9	9	9	9	0	0				ok+	low yield
NY R17-20	6	6		6	6		8	7	2	6	7	9	9	9	9	0	2	6			no	hn
NY R18- 4	7	7		7	5		7	6	6	5	5	8	3	9	9	0	2	7			no	growth cracks
NY R18- 6	6	6		6	6		8	7	3	6	7	9	9	9	9	0	1	8			no	air cracks
NY R19- 7	3	4		4	5		8	9	5	5	6	8	9	9	9	1	3	8			no	low yield
NY R19-20	4	4		4	6		8	7	3	6	7	9	9	9	9	1	1	6			no	hn
NY R41-11	6	7		6	7		8	7	2	8	8	9	9	9	9	0	0				ok+	small
NY R41-18	7	7		7	6		8	7	3	8	8	9	9	9	9	1	1	6			yes	hn, nice
Cherry Red	7	7		7	8		2	6	4	6	7	8	9	9	9	0	0				ok	red, netted
NorDonna	6	7		6	5		2	7	2	7	6	3	9	7	7	0	0				no	red, knobby
Norland DR	5	3		7	5		2	7	3	6	7	7	9	6	6	0	1	7			no	red, heat spts
Atlantic	6	6		6	3		7	5	2	8	8	9	9	9	9	3	9	5			std	hn
Superior	5	6		4	8		7	6	3	6	7	7	9	9	9	0	1	8			std	poor year

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.
 (2) HH = No. of Hollow Heart tubers out of 10. HN = No. of Heat Necrosis tubers out of 10.

NJ Variety Table 13.

Yields, Specific Gravities, and Tuber Sizes for 8 Russet Potatoes Varieties, Harvested **Late** and Grown on a Silt Loam Soil at the Snyder Agricultural Research & Extension Farm near Pittstown, NJ-1997(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r		% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		% O v e r			1	2	3	4	5
						4 oz	8 oz						
Century	ne	721	447	127	1.075	74	49	17	26	25	27	10	12
B1004- 8	ne	542	427	122	1.080	82	46	4	18	36	29	11	6
Ranger	ne	550	418	119	1.083	88	53	13	12	35	32	15	6
B9922-11	ne	452	384	110	1.078	90	65	5	10	25	31	19	14
Superior	ct	463	351	100	1.070	81	47	6	19	33	30	15	2
Norkotah	ne	492	346	99	1.072	73	35	4	27	38	23	7	4
B1401- 5	ne	420	311	89	1.072	78	46	6	22	32	22	15	9
W1099Rus	cf	564	277	79	1.068	70	40	31	30	30	20	10	10
Grand Mean		525	370		1.075	79	48	11	21	32	27	12	8
CV (4)		10	15		.45	7	16						
W-D Bayes LSD.05		77	84		.008	9	11	6	9	8	7	ns	9

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 12", planted on 4/21, and harvested on 9/29.
(2) cf = USDA Chapman Farm, ct = Certified, ne = NE Regional Project.
(3) Size 1 = Under 4 oz, S2 = 4 to 8 oz, S3 = 8 to 12 oz, S4 = 12 to 16 oz, and S5 = Over 16 oz.
(4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 14. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown near Pittstown, NJ 1997 (1).

Variety	PLANT				TUBER CHARACTERS						TUBER DEFECTS						OVER		Comments			
	A	A	P	P	M	S	C	T	S	D	A	S	G	H	S	H	H	N		R	ALL	
Century Russet	9	8	8	8	6	9	9	8	8	9	6	7	7	7	9	3	0				ok+	little russetting
B1004-8	8	8	8	8	6	9	9	5	4	6	6	7	8	7	9	18	7	6			no	hh hn
Ranger Russet	8	7	7	7	7	9	9	5	4	8	7	6	7	6	9	0	0			ok+	gc	
B9922-11	8	7	7	7	7	9	9	4	2	6	5	4	6	8	9	13	0			ok	hh irregular	
Superior	6	6			4	9		7	6	4	7	8	8	7	9	0	0			std	nice	
Russet Norkotah	6	6			4	9		5	3	7	7	8	7	9	9	4	1	3		ok+	hh	
B1401-5	6	7			4	9		4	2	5	6	5	7	7	9	6	3	6		no	hh hn	
W1099Rus	7	7			5	8		5	4	8	6	3	4	2	9	2	4	3		no	knobby	

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 15.

Yields, Specific Gravities, and Tuber Sizes for 18 Round Potato Varieties, Harvested **Late Season** and Grown on a Silt Loam Soil at the Snyder Agricultural Research & Extension Farm near Pittstown, NJ-1997(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)			
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4 5
Salem	ne	775	706	170	1.067	96	73		5	4	23	38	31 4
B0856- 4	ne	723	674	162	1.065	95	63		2	5	32	41	22 0
Katahdin	ne	693	634	152	1.070	98	79		7	2	19	42	32 5
B0564- 8	ne	632	573	138	1.075	92	53		1	8	39	35	17 1
Kennebec	ny	768	568	137	1.073	97	75		24	3	22	48	25 1
Atlantic	me	598	560	135	1.086	96	66		2	4	30	43	21 3
Reba	ct	570	541	130	1.074	98	81		3	2	17	43	34 3
W 870	ne	540	504	121	1.086	96	74		3	4	22	41	30 2
B0766- 3	cf	521	494	119	1.078	97	75		2	3	22	47	28 0
B0811-13	ne	565	468	113	1.068	91	50		9	9	41	38	11 1
St. Johns	ne	498	418	100	1.072	99	89		15	1	9	29	48 12
Superior	ne	466	416	100	1.069	96	56		7	4	40	43	12 0
NorDonna	ne	431	388	93	1.064	93	58		4	7	35	45	13 0
Yukon Gold	ne	408	377	91	1.073	95	54		2	5	41	43	10 0
Norland DR	ne	455	376	90	1.050	86	32		4	14	54	29	3 0
B0852- 7	cf	365	339	81	1.073	94	58		1	6	36	43	14 1
Cherry Red	ny	374	331	79	1.077	91	37		3	9	53	36	2 0
B0811- 4	cf	167	101	24	1.078	61	2		2	39	59	2	0 0
Grand Mean		530	470		1.072	93	60		5	7	33	38	20 2
CV (4)		8	8		.21	2	9						
W-D Bayes LSD.05		52	50		.003	3	6		3	3	6	8	6 2

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/21, and harvested on 9/29.

(2) cf = USDA Chapman Farm, ct = Certified, ne = NE Regional Project, ny = Cornell Program.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 16. Plant and Tuber Characters, Tuber Defects, and Overall Rating for Varieties and Seedlings Grown near Pittstown, NJ 1997 (1).

Variety	PLANT			TUBER CHARACTERS						TUBER DEFECTS						OVER		Comments			
	A P	A P	M	S	S	C	T	S	D	A	S	G	H	C	S	H	H		N	R	ALL
Salem	7	7	8	9	9	8	7	2	5	6	8	8	9	9	0	1	7	yes	great yield		
B0856- 4	6	6	5	9	9	8	8	2	8	8	8	9	9	9	0	0		yes			
Katahdin	8	8	9	9	9	8	7	2	7	7	7	8	9	9	2	0		std	good yield		
B0564- 8	6	7	7	9	9	7	7	2	8	8	9	9	9	9	0	0		yes	ok size here		
Kennebec	8	8	8	9	9	8	8	5	6	4	5	5	9	9	3	0		std	poor appearance		
Atlantic	6	7	6	9	9	8	7	2	8	8	9	9	9	9	4	12	5	std	hh hn		
Reba	8	7	7	9	9	8	7	3	6	8	9	9	9	9	7	0		yes	hh		
W 870	7	7	7	9	9	7	7	3	3	5	7	9	9	9	3	1	7	ok	poor appearance		
B0766- 3	7	7	7	9	9	7	6	2	8	8	8	9	9	9	0	0		yes	nice		
B0811-13	6	6	6	9	9	2	8	2	8	7	6	9	9	9	0	0		no	heavy net red		
St. Johns	7	8	8	7	7	8	8	3	6	5	6	7	9	9	0	0		no	defects		
Superior	5	6	5	9	9	7	6	3	7	7	8	7	9	9	0	0		std			
NorDonna	7	7	8	9	9	2	7	3	5	7	7	9	7	7	0	0		ok+	red, deep eyes		
Yukon Gold	6	6	6	9	9	8	8	2	7	7	8	9	9	9	1	0		std	nice		
Norland DR	6	2	5	9	9	2	8	3	6	7	7	8	9	9	0	0		std	red, nice		
B0852- 7	6	6	7	8	8	1	8	2	7	7	9	9	9	9	0	1	6	ok+	nice purple, rot		
Cherry Red	6	6	6	9	9	2	7	3	7	7	8	9	9	9	0	0		ok+	red, variable		
B0811- 4	2	2	5	9	9	2	5	2	8	7	9	9	7	7	0	0		yes	small red yel fl		

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 17.

Yields, Specific Gravities, and Tuber Sizes for 18 Russet Potato Varieties, Harvested **Late Season** and Grown on a Silt Loam Soil at the Snyder Agricultural Research & Extension Farm near Pittstown, NJ-1997(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
AF1808-18	me	324	254	72	1.073	78	49	13	9	29	22	21	7	7
B1409- 2	cf	451	346	98	1.077	77	47	16	7	30	31	9	7	7
B1409- 2	cf	597	556	158	1.081	93	75	4	2	18	28	15	33	33
B1452- 3	cf	414	284	81	1.075	69	22	13	19	46	19	1	2	2
B1452-27	cf	742	505	144	1.057	68	35	8	24	33	25	10	1	1
B1453- 7	cf	660	559	159	1.092	85	43	3	13	42	32	10	0	0
B1463- 1	cf	286	203	58	1.068	71	39	9	21	32	29	2	8	8
B1463- 2	cf	542	368	105	1.081	68	47	21	11	21	27	13	7	7
B1463-12	cf	669	456	130	1.077	68	30	4	28	38	22	4	4	4
B1469- 2	cf	390	344	98	1.077	88	63	7	4	25	34	17	13	13
B1469- 2	cf	523	441	126	1.080	84	69	14	2	15	28	16	26	26
B1469-14	cf	503	408	116	1.079	81	49	4	15	32	17	22	10	10
B1482- 6	cf	561	464	132	1.073	83	69	13	4	13	27	29	14	14
B1482-10	cf	283	202	58	1.068	71	29	10	18	43	25	4	0	0
B1639- 5	cf	418	305	87	1.076	73	39	12	15	34	28	6	6	6
B1639- 5	cf	624	530	151	1.080	85	46	5	10	39	29	14	3	3
Belrus	cf	361	277	79	1.077	77	23	7	17	54	18	5	0	0
R Burbank	ne	807	401	114	1.078	50	35	37	14	15	15	11	9	9

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/21, and harvested on 9/29.

(2) cf = USDA Chapman Farm, me = Maine, ne = NE Regional Project.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 18. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown near Pittstown, NJ 1997 (1).

Variety	PLANT				TUBER CHARACTERS						TUBER DEFECTS						OVER	
	A	A	M	S	C	T	S	D	A	S	G	H	H	H	N	R	CC	ALL
	P	P	t	S	l	x	h	p	p	G	C	S	S	S	N	R	CC	ALL
AF1808-18	6	8	6	7	6	5	8	5	5	7	8	9	1	0	0			no
B1409- 2	7	8	4	9	6	4	6	6	5	8	7	9	0	0	0			yes
B1409- 2	6	7	7	9	7	5	6	5	5	8	6	7	0	0	0			no
B1452- 3	8	7	5	9	5	4	4	6	5	7	5	9	0	0	0			no
B1452-27	7	8	5	9	6	6	4	3	6	9	9	5	0	0	0			ok+
B1453- 7	9	8	7	9	6	5	8	5	5	7	7	9	5	1	6			ok
B1463- 1	6	7	5	9	7	4	7	6	6	8	6	9	0	0	0			no
B1463- 2	6	6	7	9	6	6	8	6	6	5	8	7	2	0	0			no
B1463-12	7	7	6	9	7	6	6	6	6	6	9	9	0	0	0			ok
B1469- 2	6	7	4	9	7	5	8	6	6	7	9	9	0	1	4			ok
B1469- 2	8	7	6	9	6	6	7	6	6	8	6	9	2	1	6			ok
B1469-14	6	5	5	9	4	3	6	6	6	8	8	9	2	0	0			ok
B1482- 6	7	7	7	9	4	2	8	6	6	7	6	9	6	7	3			no
B1482-10	3	4	4	9	5	4	8	5	5	8	6	9	0	3	5			no
B1639- 5	7	7	6	9	5	4	8	6	5	7	6	9	1	0	0			no
B1639- 5	8	8	6	9	5	4	5	5	5	7	7	9	1	0	0			ok
BelRus	6	7	4	9	5	3	8	7	6	8	8	9	0	3	6			ok
Russet Burbank	8	8	8	9	5	4	8	6	2	1	5	9	1	0	0			no
																		very knobby

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 40. HN = No. of Heat Necrosis tubers out of 40.

NJ Variety Table 19. Yields, Specific Gravities, and Tuber Sizes for 53 Round Potato Varieties, Harvested Late Season and Grown on a Silt Loam Soil at the Snyder Agricultural Research & Extension Farm near Pittstown, NJ - 1997 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
AK10-57-19-5me		308	175	42	81	57		4	18	25	53	4	0	0
B0984- 1	cf	529	443	106	83	84		65	15	2	19	38	27	0
B0985- 1	cf	214	183	44	62	85		11	2	13	74	11	0	0
B1072-21	cf	632	604	144	69	96		91	4	1	4	26	52	12
B1088-37	cf	519	431	103	66	83		58	14	3	25	32	26	0
B1088-37	cf	374	344	82	71	92		68	6	2	24	46	22	0
B1206-10	cf	455	421	100	75	93		73	4	3	19	45	28	0
B1321-22	cf	667	571	136	77	86		54	6	8	32	38	15	1
B1344- 5	cf	538	469	112	73	87		70	9	4	18	41	27	2
B1352-10	cf	288	272	65	81	94		71	0	6	24	43	27	0
B1354- 6	cf	403	369	88	68	91		76	6	3	15	39	37	0
B1362- 7	cf	440	422	101	83	96		76	2	2	20	41	31	4
B1362- 9	cf	503	330	79	63	66		60	33	1	6	18	27	15
B1363- 6	cf	731	675	161	79	92		70	4	4	23	37	32	1
B1363-10	cf	281	232	55	64	83		38	4	14	45	38	0	0
B1365- 5	cf	294	271	65	85	92		61	6	2	32	38	23	0
B1367-12	cf	274	249	59	--	91		45	1	8	46	45	0	0
B1473-10	cf	435	402	96	67	93		62	3	5	30	50	13	0
B1477- 1	cf	559	510	122	69	91		58	3	6	34	36	22	0
B1491- 4	cf	666	362	86	55	54		25	40	5	30	20	5	0
B1491- 5	cf	314	272	65	74	87		24	2	12	62	20	4	0
B1491-10	cf	464	355	85	58	76		29	10	14	48	26	3	0
B1491-17	cf	643	485	116	70	75		14	7	18	62	14	0	0
B1491-20	cf	288	174	42	57	60		11	3	37	50	9	1	0
B1492- 6	cf	632	380	91	79	60		37	36	4	24	24	13	0

NJ Variety Table 19. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)			
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4
B1492-10	cf	398	282	67	64	71	71	11	1	28	60	11	0
B1492-12	cf	765	555	133	72	73	73	21	10	17	51	20	0
B1492-15	cf	469	398	95	59	85	85	55	11	4	30	43	12
B1493-1	cf	445	362	86	73	81	81	21	4	15	60	18	3
B1493-2	cf	613	541	129	65	88	88	66	6	5	22	35	30
B1493-3	cf	425	312	74	71	73	73	29	14	12	44	26	3
B1495-6	cf	434	384	92	74	89	89	28	0	11	61	24	4
B1495-15	cf	646	584	139	66	90	90	56	4	6	34	39	17
BD113-3	cf	200	21	5	69	11	11	0	0	89	11	0	0
BD146-2	cf	205	35	8	81	17	17	0	0	83	17	0	0
BD173-1	cf	357	246	59	77	69	69	19	3	28	50	17	2
NY P21-2	ny	699	671	160	75	96	96	74	2	2	22	39	35
NY P32-3	ny	529	519	124	83	98	98	75	0	2	23	35	40
NY P63-1	ny	525	493	118	86	94	94	61	0	6	33	41	20
NY Q 8-2	ny	683	641	153	83	94	94	75	5	2	19	48	25
NY R170-6	ny	626	554	132	74	89	89	64	6	6	25	39	24
NY R17-2	ny	343	317	76	65	92	92	39	0	7	54	28	11
NY R17-7	ny	706	646	154	68	91	91	53	2	7	38	43	9
NY R17-106	ny	738	674	161	70	91	91	48	1	8	43	39	9
NY R17-11	ny	564	546	130	73	97	97	72	1	2	25	52	20
NY R17-19	ny	516	485	116	72	94	94	60	2	4	34	41	19
NY R17-20	ny	604	550	131	83	91	91	60	5	4	31	46	14
NY R18-4	ny	640	405	97	70	63	63	25	27	9	38	20	5
NY R18-6	ny	469	427	102	68	91	91	62	5	4	29	46	16
NY R19-7	ny	319	297	71	66	93	93	71	1	6	23	56	15
NY R19-20	ny	425	383	91	74	90	90	45	2	7	45	38	7
NY R41-11	ny	657	629	150	68	96	96	67	1	4	28	47	20
NY R41-18	ny	744	680	162	59	91	91	72	6	3	20	44	27

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/21, and harvested on 9/29.

(2) cf = USDA Chapman Farm, ne = NE Regional Project, ny = Cornell Program.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 TO 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) CV=Coef of Variation; W-D Bayes LSD.05=Waller Duncan Test For Least Significant Difference.

NJ Variety Table 20. Plant and Tuber Characters, Tuber Defects, and Overall Rating for Varieties and Seedlings Grown near Pittstown, NJ 1997 (1).

Variety	PLANT			TUBER CHARACTERS						TUBER DEFECTS						OVER ALL	Comments				
	A	A	P	M	S	S	C	T	S	D	A	S	G	H	H			H	N	R	
AK10-57-19-5	7	6		7	9	9	2	7	7	6	7	5	7	5	9	0	0			no	red, grow cracks
B0984-1	7	6		7	9	9	2	8		6	6	5		5	9	2	0			no	red, defects
B0985-1	3	3		2	9	9	2	8		2	7	8		9	9	0	0			ok	nice, low yield
B1072-21	8	8		7	8	8	8	7	7	2	7	5		9	9	1	1	6		ok	poor appearance
B1088-37	6	6		4	9	9	8	7	7	2	6	6		9	6	9	0			no	growth cracks
B1088-37	6	5		5	9	9	8	7	7	2	6	6		9	5	9	0			no	growth cracks
B1206-10	6	7		6	9	9	7	6		2	6	6		7	6	9	0	2	6	no	hn
B1321-22	7	8		5	9	9	7	6		2	6	7		6	7	9	0	0		ok	knobby
B1344-5	6	7		4	8	8	7	7	7	5	5	5		9	9	9	0	2	5	no	hn, poor appear.
B1352-10	3	6		4	9	9	7	7	7	3	7	6		9	9	9	0	0		no	low yield
B1354-6	6	7		5	9	9	7	7	7	2	6	6		8	7	9	0	0		no	low yield
B1362-7	7	6		6	7	9	8	7	7	2	7	7		9	9	9	0	0		yes	
B1362-9	8	8		7	9	9	8	7	7	2	7	6		9	3	9	4	0		no	hh, grow cracks
B1363-6	8	8		7	9	9	8	8	8	2	5	7		7	9	9	0	0		yes	
B1363-10	3	4		5	9	9	7	5	7	4	3	6		7	7	9	0	0		no	low yield
B1365-5	6	8		6	9	9	8	8	8	2	7	7		7	7	7	0	0		no	defects
B1367-12	4	4		4	9	9	8	7	7	3	6	7		9	9	9	0	2	6	no	hn, low yield
B1473-10	6	7		3	9	9	8	7	7	2	6	6		9	9	9	0	0		ok	
B1477-1	5	6		6	9	9	7	6	7	3	6	6		8	9	9	0	2	7	ok+	good yield
B1491-4	7	8		5	9	9	2	8	8	7	7	4		1	7	3	0	0		no	red, very knobby
B1491-5	4	4		3	9	9	2	6	6	2	7	7		9	9	9	0	0		ok+	red, small
B1491-10	4	3		4	9	9	2	6	6	2	7	7		6	7	9	0	0		ok+	red, knobby
B1491-17	7	6		5	9	9	2	7	7	5	6	6		7	9	9	0	0		ok+	red
B1491-20	3	3		4	9	9	2	6	6	2	6	6		6	9	7	0	0		no	red, low yield
B1492-6	6	7		7	7	7	2	7	7	5	7	3		2	6	9	0	0		no	red, very knobby

NJ Variety Table 20. (Continued.)

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS										OVER						
	A	P	P	M	S	S	C	T	x	h	p	p	A	S	G	C	S	H	H	N	R	CC	ALL	Comments	
B1492-10	6	5		4	9		2	7		2	4	6		9	9	9	9	0	0					no	red, small
B1492-12	9	8		8	9		2	8		2	6	6		5	7	6	6	0	0					no	red, knobby
B1492-15	6	5		4	9		2	6		3	7	6		7	5	9	9	0	0					no	red, grow cracks
B1493- 1	6	6		6	9		2	6		3	6	6		7	9	9	9	0	0					ok	netted red
B1493- 2	6	6		5	9		2	7		3	7	5		6	9	9	9	0	0					no	red, poor appear
B1493- 3	5	5		4	9		2	6		3	7	7		7	9	9	9	0	0					ok	red, netted
B1495- 6	6	6		5	9		2	6		2	3	7		9	9	9	9	0	0					yes	red, nice
B1495-15	8	6		6	7		1	6		2	7	7		8	9	9	9	0	0					yes	purple, big
BD113- 3	5	5		2	9		8	7		7	7	3		9	9	9	5	0	0					ok	yellow flesh
BD146- 2	5	5		3	9		6	6		6	7	3		6	9	9	5	0	0					no	yellow flesh
BD173- 1	7	7		7	9		8	7		4	7	5		5	9	9	7	0	0					ok+	yellow flesh
NY P21- 2	8	8		6	9			6		2	6	7		9	9	9	9	0	0					yes	nice, big
NY P32- 3	6	7		5	8		8	8		2	5	7		9	9	9	9	0	0					yes	big
NY P63- 1	7	7		7	9		7	6		2	7	7		9	9	9	9	0	0					yes	nice
NY Q 8- 2	8	7		6	9		7	6		3	6	7		9	9	9	9	0	0					yes	good yield, big
NY R170-6	7	8		6	9		7	6		3	6	6		9	7	9	9	0	0					ok	
NY R17- 2	7	6		5	9		8	9		2	6	7		9	9	9	9	0	0					ok	low yield
NY R17- 7	7	7		7	9		8	6		2	7	7		9	7	9	9	0	0					yes	good yield
NY R17-106	7	7		7	9		7	6		2	6	7		9	9	9	9	0	0					yes	good yield
NY R17-11	7	7		7	8		7	7		2	7	8		9	7	9	9	0	0					yes	nice appearance
NY R17-19	6	6		5	8		8	8		2	6	7		9	9	9	9	0	0					ok+	
NY R17-20	6	7		6	9		7	6		2	6	6		8	9	9	9	0	0					ok	pink rot
NY R18- 4	7	7		6	9		7	6		4	6	6		8	3	9	9	0	0					no	growth cracks
NY R18- 6	7	5		5	9		8	7		3	7	6		9	6	9	9	0	0					ok	
NY R19- 7	4	4		3	9		8	7		3	7	7		9	9	9	9	0	0					no	low yield
NY R19-20	5	6		4	9		8	7		2	7	6		9	9	9	9	0	0					no	low yield
NY R41-11	6	6		5	9		8	7		2	8	8		8	9	9	9	0	0					yes	nice appearance
NY R41-18	7	8		6	9		8	7		2	7	6		8	6	9	9	0	0					ok	growth cracks

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of Hollow Heart tubers out of 10. HN = No. of Heat Necrosis tubers out of 10.

NJ Rating Table. Rating Codes For Plant and Tuber Characters, Tuber Defects, and Chip Color Ratings.

Ap = Appearance	Cl = Color	Ap = Appearance	HH = Hollow Heart
AP = Air Pollution	Tx = Texture	SG = Second Growth	HN = Heat Necrosis
Mt = Vine Maturity	Sh = Shape	GC = Growth Crack	R = Heat Necrosis Rating
SS = Tuber Skin Set	Dp = Depth	HS = Heat Sprouts	CC = Chip Color

Plant & Tuber Appearance (Ap)	Foliar Disease Rating (AP)	Vine Maturity (Mt)	Tuber Skin Set (SS)	Tuber Color (Cl)	Tuber Texture (Tx)
1. very poor	1. dead	1. very early	1. very poor	1. purple	1. part russet
2.	2. very severe	2.	2.	2. red	2. hev. russet
3. poor	3. severe	3. early	3. poor	3. pink	3. mod. russet
4.	4.	4.	4.	4. dark brown	4. lgt. russet
5. fair	5. moderate	5. medium	5. fair	5. brown	5. net
6.	6.	6.	6.	6. tan	6. slight net
7. good	7. slight	7. late	7. good	7. buff	7. mod. smooth
8.	8. very slight	8.	8.	8. white	8. smooth
9. excellent	9. none	9. very late	9. excellent	9. bright white	9. very smooth

Tuber Shape (Sh)	Tuber Depth (Dp)	Tuber Disease Rating (SG, GC, HS, HN)	Wise Foods Chip Color (CC)	Heat Necrosis Rating (R)
1. very round	1. very flat	1. very severe	1. paper white	1.
2. mostly round	2.	2. severe	2.	2. very bad
3. round to oblong	3. flat	3.	3.	3.
4. mostly oblong	4.	4.	4. acceptable	4.
5. oblong	5. ok	5. moderate	5. borderline	5. unacceptable
6. mostly oblong	6.	6. borderline	6. unacceptable	6. borderline
7. oblong to long	7. good	7. slight	7.	7.
8. mostly long	8.	8. very slight	8.	8. slight
9. very long	9. very round	9. none	9. black chip	9. none

New York

R.L. Plaisted, B.B. Brodie, D.E. Halseth, S.A. Slack, W.M. Tingey and K.D. Paddock

Early Generations

The crossing program produced 87 round white combinations with chipping and tablestock potential, 3 red combinations, 39 trichome hybrids, 23 segregating for resistance to late and 39 combinations segregating for resistance to two or more races of Globodera rostochiensis.

Seeds produced in 1995 (V's) were sown and the seedlings were transplanted to six inch pots. Four tubers were saved from each, after selecting for tuber color in the trichome and red progenies. There were 8283 round whites, 3678 Globodera race Ro2 resistant, 1997 with late blight resistance and 4340 with trichomes.

The four hill seedling populations (U's) started with 7385 round whites. At harvest 461 were selected for tuber type, then stored at 45° for one month prior to chipping and testing for resistance to the golden nematode. The 756 reds were selected for shape and tuber color, then golden nematode resistance, and 27 saved. There were 356 selections from 3601 segregating for resistance to the Ro2 race of golden nematode.

The 3804 trichome clones were selected for tuber type at harvest, then for chip color and resistance to the golden nematode. 205 were saved. The 2092 clones bred for resistance to Pratylenchus penetrans produced 126 selections.

The third year generation (T's) consisted of 1289 clones in 24 hill plots. At harvest 345 were saved and the following winter evaluations were made for chip color, specific gravity and golden nematode resistance.

Intermediate Generations

The fourth year selections (S's) were grown as 100 hill plots for seed production and selection and in two row by 20-foot plots for observation and chip samples. From the 345 that were grown, 47 have survived the fall selection and post harvest tests.

The fifth generation (R's) were grown in 400 hill seed plots and a replicated yield trial. The 17 at this stage of selection were reduced to 6 and are being introduced to virus-free in vitro production. All are round white clones.

Advanced Generations

A summary of the performance of the most advanced clones is as follows:

NY101 = K7-1 = Steuben x Norwis (1986). Mid-late season tablestock. Pale yellow flesh. Scurfy skin. Exceptionally high yields of large round tubers. Yield at Mt. Pleasant and Ellis Hollow for seven seasons has been 110% of Atlantic. At four sites in 1995, NY101 yielded 114% of Atlantic and at two sites was 151% of Katahdin. At four sites in 1996, the yield was 124% of Atlantic. At six sites in 1997, the yield was 123% of Atlantic. The average for 14 trials was 121% of Atlantic. Early sizing. Large tuber size. Very round. Very few pickouts. Internal necrosis has been observed frequently in Long Island trials, in two Ithaca trials in 1995 and in the Harford trial in 1997. Scab resistance like Superior. Specific gravity like Katahdin. Very nice vine growth and appearance. Resistant to golden nematode. The excellent yield, tuber shape, and eating quality of this clone merit its evaluation for markets which will accept the pale yellow flesh.

NY103 = K88-24 = Steuben x (Neotbr x tbr) (1986). Midseason table and chipstock. Yield of US #1 relative to Atlantic was 91% at five upstate sites in 1993 and was 118% at seven

upstate sites in 1994, 114% at six sites in 1995, 110% at six sites in 1996, and 96% at six sites in 1997. The average of 30 tests was 107%. In four years at Riverhead, NY103 yielded 108% of Katahdin. Outstanding tuber appearance. Very bright, blemish-free skin. Round shape. Shallow eyes. Medium sized tubers. Almost free of pickouts and internal defects. Scab resistance like Monona. Tuber dormancy seven weeks longer than Katahdin and Monona. Nice vine type. Specific gravity is .013 less than Atlantic (33 trials, 5 years). Chip color is like Monona. In 1994, after 45⁰ storage the Agtron for NY103 was 54 compared with 55 for Monona. In 1995, the Agtron for NY103 and Snowden were both 60. In 1996, the Agtron score for NY103 was 49, Monona was 40, and Snowden was 53. Resistant to the golden nematode, PVX, and PVY. May not perform as well on muck soils as upland soils. This is a unique clone with exceptional tablestock and good chipping qualities, deserving special attention.

NY110 = M28-3 = Pike x Q155-3 (1988). Tablestock. Late season maturity, early sizing. Full season marketable yields in upstate trials in four years have been 91% of Atlantic. On Long Island full season yields in three years have been 114% of Katahdin. Early season yields in four years have been 115% of Superior. It has been exceptionally free of internal defects at Riverhead and upstate. Tuber size is very large. Bright skin. Specific gravity in six years has been .011 less than Atlantic. Scab resistance is similar to Monona. Tuber dormancy is five weeks longer than Atlantic. The bright skin, freedom from internal defects, and early sizing make this of particular interest for Long Island. Medium plant size, rugose leaflets. Resistant to the golden nematode.

NY112 (P7-19) = Atlantic x Q155-3 (1990) Late maturity chipstock. Very scurfy skin texture, but attractive round shape. Outstanding yield: marketable yields in four years at Ithaca 115% of Atlantic. In five

upstate trials in 1996, the marketable yield was 128% of Atlantic. In six upstate trials in 1997, the marketable yield was 117% of Atlantic. In two years, the early season yield was 106% of Superior. Good chip color from 45⁰ storage in 1996. Specific gravity is .007 less than Atlantic (14 trials), .012 greater than Monona. Tuber size is like Atlantic. Few pickouts, but hollow heart may be a problem in the larger tubers. Large vines. White flowers. Golden nematode resistant. Scab resistance between Monona and Superior.

NY115 (P23-31) = Pike x NY88 (1990) Medium maturity chipstock and tablestock. Large tuber size. Early sizing. Attractive, very bright tubers. Marketable yields in upstate trials in four years were 93% of Atlantic. Early harvest yields in two years were 108% of Superior. Few pickouts and internal defects. Scab resistance like Atlantic. Golden nematode resistant. White flowers. Attractive vine. Specific gravity is .010 less than Atlantic. Outstanding chip color in 1995 and 1996. The tuber appearance and chip color have been very favorable, but the yield has been marginal, so special spacing and fertilizer trials are needed.

NY118 (P49-19R) = D191-103 x Chieftain (1990). Late season, light red tablestock. Marketable yields at Ellis Hollow and Harford in 1996 and 1997 were 91% of Chieftain. At Freeville in 1997, the yield was 101% of Chieftain. Tuber set and size of NY118 and Chieftain are similar. Few misshapen tubers and free of internal defects. Attractive, oval shape. Skin is slightly textured and resists skinning. Eyes are sparse and very shallow. The intensity of color is similar to that of Chieftain. Flesh color is bright white before and after boiling. Specific gravity is .005 less than Chieftain. Tuber dormancy is 4 weeks longer than Chieftain. Better scab resistance than Chieftain. Resistant to race Ro1 of the golden nematode. The overall appearance of

this clone merits its evaluation as an alternative to Chieftain.

NY119 (P63-1) = E57-13 x NY91 (1990)

Midseason chipstock. Marketable yields at Ellis Hollow and Harford in 1996 and 1997 were 98% of Atlantic. In three other NY trials in 1997 the yield was 90% of Atlantic. Early harvest yield in 1997 was 103% of Superior. Tuber set is greater than Atlantic and tuber size is less. Few pickouts, but hollow heart has been a problem in 6 of 10 trials. Specific gravity is .002 greater than Atlantic (9 trials). Chip color from 45⁰ storage has been brighter than Monona. Slight after cooking darkening and severe sloughing after boiling. Tuber dormancy 5 weeks longer than Atlantic. Good vine type. Scab resistance like Superior. Resistant to race Ro1 of golden nematode. Susceptible to midseason Sencor application. Looks promising for chipstock if hollow heart can be controlled.

NY120 (Q8-2) = Kanona x AF186-2 (1991)

Mid-late season chipstock. Marketable yields at Ellis Hollow and Harford in 1996 and 1997 were 104% of Atlantic. In three other NY trials in 1997, the yield was 123% of Atlantic. Early harvest yield in 1997 was 106% of Superior. In three trials in 1997, Q8-2 averaged 6.3 tubers per foot compared to 7.3 for Atlantic and weighed 7.8 oz. compared to 6.7 for Atlantic. A small proportion of misshapen pickouts. Generally free of internal necrosis and hollow heart. Very nice vine type. Tubers have a very scurfy skin texture. Specific gravity is .002 less than Atlantic (9 trials). Chip color from 45⁰ has been better than Monona. Tuber dormancy has been two weeks shorter than Atlantic. Scab resistance has been like that of Monona. Resistant to race Ro1 of the golden nematode. Looks promising for chipstock. Needs spacing and fertility trials in 1998. Limited nitrogen and closer spacing may improve yield, size and chip color.

NY121 (Q237-25) = N43-288 x E74-7 (1991)

Mid-late season tablestock. Bright white skin. This clone has resistance to late blight, and to four races of the cyst nematode Ro1, Ro2, P4A, and P5A. It appears to be resistant to PVY and scab. In a single trial in Ellis Hollow in 1997 it produced a marketable yield 87% of Atlantic. Tuber size is smaller than Atlantic. It had no internal or external defects. The specific gravity was .007 less than Atlantic. Scab reaction is like Monona.

NY122 (R3-14) N42-10 x Praty Bulk (1992)

Medium maturity tablestock. Bright white skin. Oblong shape. This clone is resistant to four races of the cyst nematode, Ro1, Ro2, P4A, and P5A. It may be resistant to PVY. In a single trial in Ellis Hollow in 1997, it produced a marketable yield 103% of Atlantic. Tuber size was similar to Atlantic. The loss from misshapen tubers was greater than Atlantic, but it had fewer internal defects. The specific gravity was .016 less than Atlantic. This clone has potential use by tablestock growers who need to grow an Ro2 resistant variety. Scab reaction is similar to Katahin.

NY123 (R127-19) = M504-2 x L227-243

(1992). Medium-late maturity tablestock. Bright white skin. This clone combines good trichome features with attractive tuber shape and good agronomic performance. In a single trial in Ellis Hollow in 1997, it produced a marketable yield 99% of Atlantic. There were few pickouts and no internal defects. The specific gravity is .005 less than Atlantic. At Freeville, in plots protected by insecticide, NY123 yielded 95% of Allegany. In adjacent plots without protection from insecticides NY123 suffered only 14% yield reduction whereas Allegany suffered 70% yield reduction. Three year's data show only 11% yield reduction due to Colorado potato beetles in unprotected plots and no visible leaf hopper damage. This clone is resistant to race Ro1 of the golden nematode and probably to PVY. Scab resistance is like Atlantic.

Long Island, New York

J. B. Sieczka, D. M. Gergela, R. C. Neese, M. L. Masierowska and D. D. Moyer

Introduction: Experiments conducted in 1997 are part of an ongoing program evaluating promising potato clones under Long Island conditions. Fifty-three potato clones were evaluated in replicated experiments conducted at the Long Island Horticultural Research Laboratory (LIHRL). In addition, fifty-eight clones were included in an observation trial.

Methods: The randomized complete block design with four replications was used in all the experiments. Variety plot size was 2 rows by 12 feet. Fertilizer was applied at a rate of 1,000 lbs/A of 10-20-20 in bands at time of planting (4/15-16/97). An additional 60 lbs N/A were applied when plants were 4 to 6 inches tall. Vines in the early experiment were rated for maturity on 8/16/97, plants were roto-cut on 8/11/97 and yield data were collected on 8/20/97. Vines in other variety evaluation experiments were vine killed on 9/12/97 and were harvested on 9/23/97. Specific gravity was determined by the hydrometer method. Internal defects were determined on 10 tubers per replication in the 3.25 to 4 inch or 12 to 16 oz. categories for round and russet experiments, respectively. Tables summarize maturity ratings, tuber appearance and shape.

Experiments to determine the effect of nitrogen rate and spacing on vigor and yield of NY103, NY109 and B9922-11 were established on 4/23/97. Plot size was 3 rows x 15 feet long with the center row x 12 feet used for data. All plots were fertilized at a rate of 1,000 lbs/A of 10-20-20 in bands at planting. Sidedress nitrogen treatments of 0, 50, and 100 lbs/A were applied on 6/4/97. Spacing treatments were 6 and 9 inches. Plants were vine killed on 9/12/97 and harvested on 10/7/97.

Early White-skinned Clones: There were no significant differences in total yield and marketable yield between Andover, Superior N1 (standard Superior obtained from Nature Mark), AF1470-6, AF1475-20, Reba (NY87), NY109 and NY110 (Tables 2 & 3). The best appearing lines were Andover, Reba, NY109, and NY110. Tubers of AF1475-20 and NY110 had the highest specific gravity. Tubers of AF1437-1 and AF1470-6 had low specific gravity. Internal necrosis was observed in tubers of AF1470-6, AF1475-20 and NY109.

NE184 White-skinned Clones: The marketable yields of Katahdin, Atlantic and B0766-3 were not significantly different from each other (Tables 4 & 5). NY103 tubers were the most attractive and AF1615-12 and Reba tubers had good appearance. Specific gravity of Atlantic and NY102 tubers was high. Internal defects were severe in Atlantic, Yukon Gold, and AF1480-5.

White-Skinned University of Maine and USDA Seedlings: AF1714-2 and B1240-14 produced marketable yields significantly lower than Katahdin (Tables 6 & 7). All other entries produced marketable yields not significantly different from Katahdin. The specific gravity of B1240-14 tubers was considerably higher than the others. The best looking lines were B0564-9, B1240-12 and B1429A-6. Severe internal defects were noted in tubers of AF1773-1, B1240-14 and B1429A-6.

White-skinned Cornell Clones: Allegany, Norwis, NY103 and NY109 produced the best marketable yields (Tables 8 & 9). Norwis, NY103, and Q3-12 tubers were the largest in the experiment. Entries that had specific gravity readings greater than 1.080 were: Allegany, P32-3, P63-1, P73-2, Q3-12

and Q8-2. NY103 and NY115 had the best tuber appearance. Other lines with attractive tuber type were NY109, NY110, P32-3 and Q3-12.

Red-skinned Clones: Chieftain, Redsen and Red Ruby produced similar marketable yields (Tables 10 & 11). Redsen had the most intense red color and the best appearance. Tubers of B0811-4 are very small, have a pink smooth skin and yellow flesh. This line could fit a niche market even though its yield is very low. Other lines that may fit niche markets are B0811-13 (red netted skin with yellow flesh), R174-1 (purple skin and mottled purple flesh) and R174-2 (smooth red skin with pink mottled flesh).

Russet-skinned Clones: The yield of tubers greater than eight ounces was poor for all entries (Tables 12 & 13). The performance of Century Russet was disappointing. The best yielding russet was B9922-11. This line has golden nematode resistance. Tubers are oblong to long, heavily netted and have a high specific gravity. Although not a major problem in this experiment, hollow heart has been a concern in a cultural practice experiment this year and other experiments in the past.

Observation Trial: Data from a non-replication trial on yield, appearance, specific gravity and internal defects of early selection clones and recently released varieties are presented in (Table 14).

Clone X N Rate X Spacing: NY103. The highest total and marketable yields were produced at the six inch spacing and sidedress rate of 100 lbs N/A (Tables 15 & 16). However, the only significant effect was that of spacing on total yield. Size distribution and specific gravity were not affected by treatment.

NY109. Total and marketable yields were highest at the 100 lbs N/A sidedress rate and six inch spacing but the yields at 0 and 50 lbs N/A sidedress rates were nearly identical (Tables 17 & 18). The nine inch spacing resulted in a higher percentage of tubers greater than 2.5 inches than the six inch spacing. Specific gravity was not affected by treatment.

B9922-11. Total and marketable yields increased when sidedress nitrogen was applied but the 50 and 100 lbs N/A rates produced similar yields (Tables 19 & 20). Yields were not affected by spacing. There was no hollow heart at the six inch spacing and no sidedress. The amount of hollow heart was greatest at the nine inch spacing.

Storage Results: After-cooking darkening and blackspot ratings for clones grown in 1996 are given in (Table 21).

Acknowledgments: Seed was provided by R.L. Plaisted, Cornell University; K.G. Haynes, USDA; G.A. Porter, University of Maine; Childstock Farm, Malone, N.Y. The assistance of Bennett Orlowski, Rod Zeltmann, Mark Sisson, Sandra Mulvaney and Carole Brush is greatly appreciated.

Long Island Table 1. Tuber characteristics of potato clones grown on Long Island, N.Y.

CLONE	Table	Color	Texture	Shape	Depth	Eye Depth		Appearance	Comments
						Lateral	Apical		
Allegany	8,9	Bu	SN-N	R	R	S	MD-VD	6	irreg, very deep AE
Andover	2,3	Bu	N-SN	R-O	MT-R	S	MD	7	okay, some lenticels
Atlantic	4,5	Bu	N	R	R	MS	MD	6	sl irreg
Caesar	8,9	Y	RS	O	R-MT	S	S	6	irreg shape, small
Century Russet	12,13	T	RS	L-VL	R	MS	MS	5	irreg shape
Chieftain	10,11	Pi	S-RS	O-R	MT	MS	MS-MD	6	skinning, stolons
Dark Red Norland	10,11	LR	RS	O-R	MT	MS	MS-MD	6	sl irreg
Itasca	4,5	W	RS	O-L	R	MS	MS	6	irreg shape
Katahdin	4,5,6,7,8,9	W	RS	R-O	SF-MT	S	MD	6	sl irreg, stolons, scab
Kennebec	4,5	W	RS-SN	O	SF	S-MS	MS	5	pinkeye, nema, sl irreg
NorDonna	10,11	DR	S	R-O	R	MS-MD	MD	5	irreg shape
Norwis	8,9	W	S	O	MT	MD-D	D-VD	5	irreg shape, nice skin
Reba (NY87)	2,3,4,5	W-Bu	S-SN	O-R	MT	S-MS	MD	7	sl irreg, scab and rhizoc.
Red Ruby	10,11	MR	RS-SN	R-O	MT	MS-MD	MD	5	irreg shape
Redsen	10,11	DR	S	R	R	MS	MS	7	okay, some skinning
Rideau	10,11	Pi	RS	O-R	MT-SF	MS	MS-MD	5	irreg, GC, skinning
Russet Norkotah	12,13	B	HR	L	R-MT	S	S	6	irreg shape
Superior	2,3	Bu	N-SN	R-O	MT	MD-D	MD-D	5	irreg shape, pinkeye
Superior SPBT 02-05 N	2,3	Bu-W	N-SN	O-L	MT	MD-D	MD-D	4	pinkeye, irreg shape
W1099Rus	12,13	B	HR	L	MT	S	S	7	okay
Yukon Gold	4,5	Y	RS	O-R	MT	MS	MD	6	irreg, scab, pink buds, y flesh
AF1437-1	2,3	Bu	SN	R	MT	S	S-MD	6	scab, irreg shape
AF1470-6	2,3	W	RS-SN	R	MT-R	S	S	6	sl irreg shape
AF1475-20	2,3	Bu	SN	R	MT	MD	MD-D	6	okay, some skinning
AF1480-5	4,5	Bu	SN	O-R	MT	MS-MD	MD	5	irreg shape, knobs on AE
AF1606-8	6,7	W-Bu	SN	R	R-MT	S	MD	5	irreg, chain tubers
AF1615-12	4,5	W	RS	R-O	R	S	MS	7	okay but small
AF1714-2	6,7	W	RS	O-R	MT	S-MS	MS	6	sl irreg shape
AF1764-9	6,7	W	RS	O	MT	MS-MD	MD	5	irreg shape
AF1773-1	6,7	W	RS	O	MT-SF	S	MS	5	irreg, pear shape at SE
B0564-8	2,3,6,7	Bu	S-SN	R	R-MT	S	MS-MD	6	lenticels, sl irreg, star crack
B0564-9	6,7	Bu	N	R	R	S	MS	7	okay, netted
B0766-3	4,5,6,7	Bu-W	SN-N	R	MT	S-MS	MD	6	irreg shape, sprouts, bl scurf
B0811-13	10,11	DR	N	R	R-MT	MD-D	MD-D	5	irreg, yellow flesh, deep eyes
B0811-4	10,11	Pi	S	R	R	MS-MD	MD	6	small, yellow flesh, VD
B0915-3	12,13	B	HR	L	MT	S	S	6	white eyes, scab
B0967-11	10,11	Pu	RS	O	R-MT	MS	MD	5	irreg, scab
B1004-8	12,13	B	M-HR	L	MT	S	S	6	scab
B1214-7	6,7	W-Bu	RS	O	MT	MD	MD-D	4	irreg, scab, lenticels, pinkeye
B1240-12	6,7	W	SN	R-O	MT	S	MS	7	scab, pinkeye, sl irreg
B1240-14	6,7	Bu	SN-N	R	R-MT	S	MS-MD	6	irreg, scab
B1429A-6	6,7	Bu	SN-N	R	R	S	MS-MD	7	okay, netted
B9922-11	12,13	B	HR	L-O	MT	S	S	6	sl irreg shape
NY102	4,5	Bu	SN	R	MT	MS	MD	6	irreg shape, small
NY103	4,5,8,9	W	RS	O-R	MT	S-MS	MS	8	okay, some pear shape
NY109	2,3,8,9	W-Bu	RS	O-R	R-MT	S	S-MS	7	okay but lenticels
NY110	2,3,8,9	W	S-RS	R-O	MT	S	MD	7	sl irreg shape, scab
NY115	8,9	W-Bu	S	O	MT	S	S-MS	8	nice appearance
P21-2	8,9	Bu	SN	R-O	MT	MS-D	D-VD	5	irreg, very deep AE
P32-3	8,9	W	RS-S	R-O	MT	S-MS	MS	7	sl irreg
P63-1	8,9	Bu	N	R	MT	S-MS	MS	6	irreg, blotchy, not nice
P73-2	8,9	W	RS	O-L	R-MT	MS-MD	MS	6	irreg shape
Q3-12	8,9	Bu	S-SN	O-R	MT	S	MS-MD	7	okay
Q8-2	8,9	Bu	N	R	R-MT	S-MS	MS-MD	5	brown, blotchy, not table
R174-1	10,11	Pu	RS-SN	O	MT	MS	MS-MD	5	irreg, SS, mottled pur flesh
R174-2	10,11	R	RS	O	R	S	S	6	pink flesh, some pear shape

COLOR: B=brown, Bu=buff, Pi=pink, Pu=purple, R=red, T=tan, W=white. Modifiers: L=light, M=medium, D=dark.

TEXTURE: N=netted, R=russet, S=smooth. Modifiers: H=heavy, M=moderate, R=Relatively, S=Slightly. SHAPE:

L=long, O=oblong, R=round. EYE DEPTH: D=deep, M=moderate, S=shallow. TUBER DEPTH: MT=medium thick,

R=round, F=flattened, SF=slightly flattened. COMMENTS: AE = apical eyes, BL = black leg L=prominent lenticels,

lrr=irregular, Kn=knobs, Sc=scab, SE = stem end, Sk=skinned, Sl=slightly, Sm=small, Sp=sprouts, St=stolons,

SS=Silver scurf, F=flesh, Pi=pink, VD = vascular discoloration Y=Yellow, W=white.

Long Island Table 2. Yield, marketable yield, size distribution and specific gravity of early white-skinned clones grown at Riverhead, N.Y.

Clone	Total Yield	Marketable Yield		Size Distribution (%)				Specific ¹ Gravity
	cwt/A	cwt/A	percent of std.	2 to < 2"	2.5 to 2.5"	3.25 to 3.25"	4"	
Season-118 days								
Superior	302	266	100	12	48	40	0	69
Andover	369	344	130	7	29	57	6	76
Reba (NY87)	385	340	128	12	42	45	2	72
Superior N1	373	329	124	12	37	51	1	68
Superior SPBT 02-05	311	263	99	15	50	34	0	72
AF1437-1	376	302	114	20	41	38	0	60
AF1470-6	412	355	134	14	37	46	3	61
AF1475-20	411	367	138	11	33	52	4	77
B0564-8	323	267	101	17	46	37	0	73
NY109	388	340	128	12	26	56	6	67
NY110	351	318	120	10	37	51	2	78
Waller-Duncan								
LSD (0.05)	(45)	(43)						(3)

Planted on 4/15/97, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, rotocut on 8/11/97, harvested on 8/20/97.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 3. External and internal defects of early white-skinned clones grown at Riverhead, N.Y.

Clone	Tuber Defects (%)					Percentage				
	Total	Sun- burn	Mis- shapen	Growth cracks	Other ¹	Hollow heart	Brown center	Internal Necrosis		
								Sl.	Mod.	Sev.
Season-118 days										
Superior	4	1	2	0	1	0	0	0	0	0
Andover	2	1	0	0	1	5	0	0	0	0
Reba (NY87)	3	2	0	0	1	0	0	0	0	0
Superior N1	4	1	1	0	2	0	0	0	0	0
Superior SPBT 02-05	6	1	4	0	0	0	0	0	0	0
AF1437-1	11	2	0	1	9 (Sc)	0	0	0	0	0
AF1470-6	7	2	0	2	3	0	0	13	5	0
AF1475-20	3	3	0	0	0	0	0	10	3	0
B0564-8	5	1	0	0	3	0	0	0	5	0
NY109	7	4	1	1	1	0	0	10	5	0
NY110	2	1	0	0	1	0	0	3	0	0

¹ -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (.). Mechanical defects were not scored.

Long Island Table 4. Yield, marketable yield, size distribution and specific gravity of NE 184 white-skinned clones grown at Riverhead, N.Y

Clone	Total Yield	Marketable Yield	Size Distribution (%)				Specific ¹ Gravity	
	cwt/A	cwt/A	percent of std.	2 to 2.5"	2.5 to 3.25"	3.25 to 4"		
Season-150 days								
Katahdin	444	385	100	13	30	52	4	65
Atlantic	462	427	111	8	27	57	8	82
Itasca	403	335	87	17	46	36	1	66
Kennebec	388	304	79	22	32	43	3	69
Reba (NY87)	419	383	99	9	34	52	6	71
Yukon Gold	396	347	90	12	28	53	7	76
AF1480-5	407	305	79	25	36	38	1	74
AF1615-12	361	295	77	18	64	18	0	75
B0766-3	425	395	102	7	24	61	8	74
NY102	372	316	82	15	58	27	0	81
NY103	427	381	99	11	17	58	14	70
<i>Waller-Duncan</i>								
LSD (0.05)	(44)	(42)						(3)

Planted on 4/15/97, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/12/97, harvested on 9/23/97.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 5. External and internal defects of NE 184 white-skinned clones grown at Riverhead, N.Y.

Clone	Tuber Defects (%)					Percentage				
	Total	Sun- burn	Mis- shapen	Growth cracks	Other ¹	Hollow heart	Brown center	Internal Necrosis		
								Sl.	Mod.	Sev.
Season-150 days										
Katahdin	6	2	1	0	3	0	0	8	0	0
Atlantic	2	1	1	0	0	0	0	23	13	10
Itasca	7	1	3	3	1	3	0	0	0	0
Kennebec	12	3	4	0	4	0	0	0	0	0
Reba (NY87)	2	1	0	0	0	0	0	5	0	0
Yukon Gold	7	1	2	1	3	18	0	8	3	3
AF1480-5	18	0	15	0	3	3	0	15	15	0
AF1615-12	1	1	0	0	0	0	0	0	0	0
B0766-3	3	1	2	0	0	0	0	0	0	0
NY102	3	1	2	0	0	0	0	8	0	0
NY103	7	3	3	0	1	0	0	0	0	0

¹ -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects were not scored.

Long Island Table 6. Yield, marketable yield, size distribution and specific gravity of main season USDA and University of Maine white-skinned clones grown at Riverhead, N.Y.

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)				Specific ¹ Gravity
	cwt/A	cwt/A	percentage of standard	2 to < 2"	2.5 to 2.5"	3.25 to 3.25"	4"	
Season-150 days								
Katahdin	407	335	100	18	32	44	6	67
AF1606-8	381	324	97	15	44	40	0	74
AF1714-2	223	198	59	11	35	45	9	75
AF1764-9	380	338	101	11	36	52	1	71
AF1773-1	386	310	93	20	18	50	13	69
B0564-8	344	294	88	14	41	43	1	74
B0564-9	381	346	103	9	22	52	16	70
B0766-3	374	346	103	8	26	58	8	77
B1214-7	398	349	104	12	17	61	10	76
B1240-12	328	260	78	21	32	45	2	76
B1240-14	424	307	92	28	19	47	6	86
B1429A-6	351	318	95	9	30	56	4	74
<i>Waller-Duncan</i>								
<i>LSD (0.05)</i>	(57)	(60)						(2)

Planted on 4/15/97, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/12/97, harvested on 9/23/97.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 7. External and internal defects of main season USDA and University of Maine white-skinned clones grown at Riverhead, N.Y.

Clone	Tuber Defects (%)					Percentage				
	Total	Sun- burn	Mis- shapen	Growth		Hollow heart	Brown center	Internal Necrosis		
				cracks	Other ¹			Sl.	Mod.	Sev.
Season-150 days										
Katahdin	11	2	1	0	8	0	0	5	0	0
AF1606-8	5	1	2	2	1	0	0	3	0	0
AF1714-2	3	1	0	0	2	0	0	0	5	0
AF1764-9	4	0	3	0	0	0	0	0	0	0
AF1773-1	15	2	12	1	1	0	0	15	15	10
B0564-8	6	0	1	0	6	0	0	0	0	0
B0564-9	3	0	1	1	2	8	0	0	0	0
B0766-3	3	0	1	0	1	3	0	0	0	0
B1214-7	10	1	5	0	4	0	0	0	0	0
B1240-12	14	0	2	0	12 (Pe)	3	0	0	0	0
B1240-14	24	1	2	0	21 (Sc)	38	0	13	5	0
B1429A-6	3	0	0	0	3	0	0	25	3	3

¹ -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects were not scored.

Long Island Table 8. Yield, marketable yield, size distribution and specific gravity of main season Cornell University white-skinned clones grown at Riverhead, N.Y.

Cornell University white-skinned clones grown at Riverhead, N. Y.									
Clone	Total Yield	Marketable Yield		Size Distribution (%)					Specific ¹ Gravity
	cwt/A	cwt/A	percent of std.	2 to 2.5"	2.5 to 3.25"	3.25 to 4"	4 to 5"	5 to 6"	
Season-150 days									
Katahdin	371	323	100	13	25	56	6	0	67
Allegany	357	333	103	7	27	54	11	0	81
Caesar	310	256	79	18	55	28	0	0	74
Norwis	385	352	109	5	12	55	24	4	65
NY103	396	369	114	6	20	60	14	1	70
NY109	361	338	105	6	25	63	6	0	67
NY110	343	324	100	5	23	64	7	0	78
NY115	297	279	86	6	33	54	7	0	72
P21-2	347	321	100	7	24	60	8	0	70
P32-3	309	277	86	10	32	51	6	0	80
P63-1	292	264	82	10	40	46	4	0	85
P73-2	313	265	82	15	52	33	0	0	81
Q3-12	312	292	91	6	24	55	15	1	82
Q8-2	323	296	92	8	25	58	9	1	81
<i>Waller-Duncan</i>									
LSD (0.05)	(35)	(37)							(3)

Planted on 4/15/97, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/12/97, harvested on 9/23/97.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 9. External and internal defects of main season Cornell University white-skinned clones grown at Riverhead, N.Y.

Clone	Tuber Defects (%)					Percentage				
	Total	Sun- burn	Mis- shapen	Growth cracks	Other ¹	Hollow heart	Brown center	Internal Necrosis		
								Sl.	Mod.	Sev.
Season-150 days										
Katahdin	7	3	1	0	1	0	0	0	0	0
Allegany	3	1	1	0	0	0	0	0	0	0
Caesar	7	0	5	0	1	0	0	0	0	0
Norwis	3	0	2	0	0	0	0	10	0	0
NY103	3	1	2	0	0	3	3	8	3	0
NY109	3	2	0	0	1	0	0	8	0	3
NY110	2	1	0	0	1	0	0	0	0	0
NY115	1	0	1	0	0	0	0	8	3	0
P21-2	3	0	2	0	1	0	0	0	0	0
P32-3	4	0	1	0	3	3	0	3	0	0
P63-1	1	0	0	0	1	0	3	0	3	0
P73-2	3	1	3	0	0	3	0	0	0	0
Q3-12	2	1	0	0	1	0	0	5	0	0
Q8-2	3	0	1	0	2	0	0	0	0	0

¹ -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects were not scored.

Long Island Table 10. Yield, marketable yield, size distribution and specific gravity of red-skinned clones grown at Riverhead, N.Y.

	Total	Marketable Yield		Size Distribution (%)				Specific ¹
	Yield		percent	2 to		2.5 to	3.25 to	
Clone	cwt/A	cwt/A	of std.	< 2"	2.5"	3.25"	4"	Gravity
Season-149 days								
Chieftain	371	338	100	9	39	51	1	66
NorDonna	280	225	67	20	51	29	0	63
Dark Red Norland	320	276	81	14	52	34	1	57
Redsen	316	287	85	9	47	42	2	63
Red Ruby	363	312	92	14	54	31	0	63
Rideau	411	352	104	14	23	56	6	72
B0811-4	122	68	20	44	51	6	0	80
B0811-13 (NE 184)	338	283	84	16	50	33	1	75
B0811-13 (USDA)	305	266	79	13	39	46	2	74
B0967-11	331	270	80	18	20	55	7	74
R174-1	324	265	78	18	53	26	2	74
R174-2	242	180	53	26	56	18	0	76
<i>Waller-Duncan</i>								
LSD (0.05)	(44)	(40)						(3)

Planted on 4/16/97, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/12/97, harvested on 10/1/97.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 11. External and internal defects of red-skinned clones grown at Riverhead, N.Y.

Clone	Tuber Defects (%)					Percentage				
	Total	Sun- burn	Mis- shapen	Growth cracks	Other ¹	Hollow heart	Brown center	Internal Necrosis		
								Sl.	Mod.	Sev.
Season-149 days										
Chieftain	2	0	1	0	1	0	0	10	0	0
NorDonna	3	0	1	0	1	0	0	0	0	0
Dark Red Norland	1	0	0	0	0	0	0	0	3	0
Redsen	1	1	0	0	0	0	0	0	0	0
Red Ruby	4	1	3	0	0	0	0	0	0	0
Rideau	11	1	2	7	1	0	0	0	0	0
B0811-4	0	0	0	0	0	0	3	0	0	0
B0811-13 (NE 184)	3	0	3	0	0	0	0	0	0	0
B0811-13 (USDA)	3	0	2	0	0	0	3	3	0	0
B0967-11	15	0	1	1	13 (Sc)	0	0	0	5	0
R174-1	9	0	7	2	1	0	0	0	0	0
R174-2	7	0	4	1	2	0	0	0	0	0

¹ -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects were not scored.

Long Island Table 12. Yield, marketable yield, size distribution and specific gravity of russet-skinned clones grown at Riverhead, N.Y.

Clone	Total Yield	Marketable Yield		Size Distribution (%)				Specific ¹ Gravity
	cwt/A	cwt/A	percent of std.	<4	4 to 8	8 to 12	12 to 16	
Season-149 days								
Century Russet	366	190	100	48	43	7	2	76
Russet Norkotah	256	118	62	54	42	4	0	69
B0915-3	320	199	105	37	43	16	3	67
B1004-8 (NE 184)	336	161	85	52	45	3	0	74
B1004-8 (USDA)	314	158	83	50	43	7	0	72
B9922-11 (NE 184)	329	240	127	25	52	15	6	81
B9922-11 (USDA)	329	233	123	29	54	15	2	83
W1099Rus	314	175	92	44	48	7	0	64
<i>Waller-Duncan</i>								
LSD (0.05)	(34)	(27)						(2)

Planted on 4/16/97, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/12/97, harvested on 10/1/97.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 13. External and internal defects of russet-skinned clones grown at Riverhead, N.Y.

Clone	Tuber Defects (%)					Percentage				
	Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow heart	Brown center	Internal Necrosis		
								Sl.	Mod.	Sev.
Season-149 days										
Century Russet	20	0	9	0	10 (JER)	0	0	0	0	0
Russet Norkotah	7	0	3	0	4	3	5	5	0	0
B0915-3	16	1	11	2	2	8	8	20	0	0
B1004-8 (NE 184)	16	1	0	0	15 (Sc)	0	0	3	0	0
B1004-8 (USDA)	19	0	1	0	18 (Sc)	0	0	3	0	0
B9922-11 (NE 184)	3	1	1	1	0	5	0	5	0	0
B9922-11 (USDA)	5	1	2	2	0	0	0	5	0	0
W1099Rus	8	1	4	2	1	0	0	0	0	0

¹ -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects were not scored.

Long Island Table 14. Yield and quality of early selection lines and recently named varieties in a non-replicated observation trial.

Clone	Yield (cwt/A)		% of standard	2 to 4"	Def.	% Spec.	HH	% Internal Defects					Color	Texture	Shape	Depth	Eye Depth		Appear-ance	Comments ²
	Total	2-4"						BC	SI	M	S	Lateral					Apical			
Season - 146 days																				
White-skinned lines																				
Katahdin	332	289	100	9	67	0	0	10	0	0	Bu	RS	O-R	SF	S	MD	6	okay, some VD		
Katahdin	364	292	101	12	65	0	0	0	0	0	W	S	R-O	MT	MS	MD	5	sp, VD		
Superior	310	276	95	5		0	0	0	0	0	Bu	SN	O	MT	D	D	5	irreg, some long		
B1072-21	466	407	141	10	68	0	0	0	0	0	W	S	O	MT	D	D	4	Norwis #2, Sc.		
B1240-1	483	424	147	9	85	0	0	20	0	0	Bu	SN	R-O	MT	MD	VD	4	irreg		
B1414-6	438	390	135	10	80	0	0	0	0	0	Bu	RS	O-R	MT	MS	MS	7	2 VD		
B1415-7	440	377	131	13	78	0	0	10	10	0	Bu	SN	R-O	MT	MS	MD	7	Sc, sl irreg		
B1429A-3	394	306	106	12	76	0	0	0	0	0	Bu	SN	R	SF	MS	MD	6	okay, VD		
R17-11	346	324	112	1	72	0	0	0	0	0	W	SN	R	SF	MS	MD	7			
R17-19	418	364	126	3	65	0	0	0	0	0	W	RS	O	SF	S	MS	8	okay		
R17-2	332	298	103	3	70	0	0	0	0	0	W	S	R-O	MT	S	MD	7	PE type in 2 tubers		
R17-7	524	439	152	4	72	0	0	0	0	0	Bu	RS	R-O	SF	MS	MD	7	okay		
R18-6	436	394	137	5	65	0	0	10	0	0	W	R	R-O	SF	MS	D	5	sl irreg, DAE		
R19-20	459	414	143	4	76	0	0	10	0	0	W	RS	R	SF	S	D	6	DSE		
R19-7	411	392	136	2	70	10	0	0	0	0	W	S	R-O	SF	S	D	6	okay for large tubers		
Red/Purple-skinned																				
Chieftain	380	327	100	3	66	0	0	10	0	0	Pi	RS	O-R	MT	MS	MD	6			
Chieftain	426	364	111	3	69	0	0	10	0	0	Pi	RS	O-R	MT	MS	MD	6	irreg, sk		
B0852-7	360	323	99	1	75	0	0	0	0	0	Pu	RS	R-O	R	MS	MS	7	Wh flesh		
B1145-2	193	106	33	5	63	0	0	0	0	0	LR	RS	R	R	S	S	5	irreg, sm		
B1491-10	264	193	59	6	57	0	0	10	0	0	LR	RS	R	MT	MS	MS	5	irreg		
B1491-5	279	207	63	0	69	0	0	30	0	0	LR	SN	R	SF	MD	MD	5	irreg, Y flesh, VD		
B1495-6	196	163	50	0	64	0	0	0	0	0	LR	SN	R	F	MS	MS	4	irreg		
S45-1	257	207	63	10	69	0	10	0	0	0	Pu	N	O	R	MS	MS	4	irreg, Kn, mottled Pu		
S45-2	354	288	88	7	69	0	0	0	0	0	Pu	N	O	R	MS	MS	5	wh cortex, mottled pu		
S45-8	450	420	128	1	69	0	0	0	0	0	Pu	RS	O	SF	MS	MS	4	pur flesh, wh core		
S45-9	408	350	107	8	65	0	0	0	0	0	DR	S	O	SF	S	S	8	Att, pi flesh		
S45-10	285	199	61	7	75	0	0	0	0	0	Pu	RS	O	R	MS	MS	6	deep mottled Pu		

Katahdin and Chieftain were replicated two times.

Long Island Table 15. The effect of N sidedress rate and spacing on yield and quality of NY 103 grown at Riverhead, N.Y.

Spacing (inches)	Sidedress (lb N/A)	Total Yield cwt/A	Marketable Yield		Size Distribution (%)				Specific ¹ Gravity
			cwt/A	percent of std.	< 2"	2 to 2.5"	2.5 to 3.25"	3.25 to 4"	
Season-142 days									
6"	0	384	327	100	15	26	53	6	69
6"	50	389	347	106	11	30	55	5	73
6"	100	442	386	118	13	26	56	5	72
9"	0	367	331	101	10	23	61	6	71
9"	50	376	328	100	13	28	52	7	69
9"	100	383	324	99	15	24	54	7	72

Significant effects: Spacing on total yield <0.05; Spacing x N rate on specific gravity <0.05.

Planted on 4/23/97, fertilizer rate was 100-200-200/A, sidedress nitrogen applied on 6/4/97, vine killed on 9/12/97, harvested on 10/7/97.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 16. External and internal defects of NY 103 grown at Riverhead, N.Y.

Spacing (inches)	Sidedress (lb N/A)	Tuber Defects (%)					Percentage				
		Total	Sun- burn	Mis- shapen	Growth cracks	Other ¹	Hollow heart	Brown center	Internal Necrosis		
									Sl.	Mod.	Sev.
Season-142 days											
6"	0	8	3	3	0	2	0	3	3	0	3
6"	50	5	1	2	0	2	0	0	5	0	0
6"	100	7	2	3	0	2	0	0	8	0	0
9"	0	5	1	3	0	1	0	0	0	0	0
9"	50	7	1	3	0	3	0	0	5	0	0
9"	100	11	2	4	0	4	0	0	3	0	0

¹ -Other defects were scab and pink eye.

Long Island Table 17. The effect of N sidedress rate and spacing on yield and quality of NY 109 grown at Riverhead, N.Y.

Spacing (inches)	Sidedress (lb N/A)	Total Yield cwt/A	Marketable Yield		Size Distribution (%)				Specific ¹ Gravity
			cwt/A	percent of std.	< 2"	2 to 2.5"	2.5 to 3.25"	3.25 to 4"	
Season-142 days									
6"	0	418	378	109	10	27	60	3	67
6"	50	413	359	104	13	31	55	1	66
6"	100	512	454	131	11	28	54	6	67
9"	0	404	353	102	13	22	58	7	68
9"	50	399	346	100	13	20	56	11	67
9"	100	434	386	111	11	24	60	5	67

Significant effects: Spacing on total and marketable yield <0.05

Significant effects: N rate on total and marketable yield <0.01

Planted on 4/23/97, fertilizer rate was 100-200-200/A, sidedress nitrogen applied on 6/4/97, vine killed on 9/12/97, harvested on 10/7/97.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 18. External and internal defects of NY 109 grown at Riverhead, N.Y.

Spacing (inches)	Sidedress (lb N/A)	Tuber Defects (%)					Percentage				
		Total	Sun- burn	Mis- shapen	Growth cracks	Other ¹	Hollow heart	Brown center	Internal Necrosis		
									Sl.	Mod.	Sev.
Season-142 days											
6"	0	4	2	1	0	1	0	3	15	5	0
6"	50	7	3	1	0	2	0	0	8	3	0
6"	100	6	4	0	0	1	0	0	8	0	5
9"	0	8	6	1	0	1	0	0	18	5	3
9"	50	9	6	1	0	2	0	0	20	0	3
9"	100	7	3	1	0	3	0	0	20	13	3

¹ -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No.1 grade, primary defects listed in (). Mechanical defects were not scored.

Long Island Table 19. The effect of N sidedress rate and spacing on yield and quality of B9922-11 grown at Riverhead, N.Y

Spacing (inches)	Sidedress (lb N/A)	Total Yield cwt/A	Marketable Yield		Size Distribution (%)				Specific ¹ Gravity
			cwt/A	percent of std.	< 4	4 to 8	8 to 12	12 to 16	
Season-142 days									
6"	0	342	211	106	38	56	5	1	85
6"	50	387	230	115	41	49	10	0	85
6"	100	363	228	115	37	54	9	0	84
9"	0	312	199	100	36	56	7	1	86
9"	50	344	231	116	33	54	13	0	85
9"	100	371	244	123	34	55	10	1	84

Significant effects: N rate on total yield <0.05; N rate on marketable yield <0.01.

Planted on 4/23/97, fertilizer rate was 100-200-200/A, sidedress nitrogen was applied on 6/4/97, vine killed on 9/12/97, harvested on 10/7/97.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 20. External and internal defects of B9922-11 grown at Riverhead, N.Y.

Spacing (inches)	Sidedress (lb N/A)	Tuber Defects (%)					Percentage				
		Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow heart	Brown center	Internal Necrosis		
									Sl.	Mod.	Sev.
Season-142 days											
6"	0	1	0	1	1	0	0	0	0	0	0
6"	50	3	1	1	1	0	8	0	0	0	0
6"	100	2	1	0	1	0	10	0	0	0	0
9"	0	1	0	1	1	0	18	0	3	0	0
9"	50	4	1	1	1	1	18	0	0	0	3
9"	100	2	1	0	1	0	15	0	0	0	0

¹ -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S.No.1 grade, primary defects listed in (). Mechanical defects were not scored.

Long Island Table 21. After-cooking darkening and blackspot ratings of clones grown in 1996.

NE107 White			White			Red			Russet		
1996 Tables 4-5			1996 Tables 6-7			1996 Tables 8-9			1996 Tables 10-11		
Clone	ACD	BS	Clone	ACD	BS	Clone	ACD	BS	Clone	ACD	BS
Katahdin	4.7	6.0	Katahdin	4.9	6.0	Chieftain	5.0	5.9	Belrus	5.0	5.9
Atlantic	4.3	6.0	Superior	4.5	5.8	Dark Red Norland (ME)	4.0	6.0	Century Russet	5.0	5.9
Niska	4.9	6.0	Norwis	5.0	6.0	Dark Red Norland (NE)	4.6	6.0	Russet Norkotah	4.7	6.0
Snowden	5.0	5.9	AF1763-2	4.5	6.0	Redsen	4.0	6.0	B0835-11	4.9	6.0
AF1331-2	5.0	5.9	B0564-9	5.0	5.9	B0811-13	4.9	5.9	B1004-8	4.3	5.6
AF1438-5	5.0	5.9	B0766-3	4.7	5.8	B0852-7	4.9	6.0	B9922-11	4.9	6.0
AF1455-9	3.9	5.9	B0856-4	4.9	6.0	B0967-11	5.0	6.0			
B0564-8	4.8	6.0	B0972-10	5.0	6.0	B0984-1	4.8	5.9			
B0564-9	4.9	5.9	NY103	4.4	6.0						
NY87	4.7	6.0	NY108	4.6	6.0						
NY99	3.2	5.9	NY109	4.7	6.0						
NY102	4.9	5.8	NY110	4.8	6.0						
NY103	4.5	5.9	NY113	4.2	6.0						
W870	4.8	5.9	NY114	4.7	6.0						
			NY115	4.5	6.0						
			NY117	4.8	5.8						
<i>Fisher's Protected</i>			(0.4) (0.1)			(0.3) NS			(0.3) NS		
LSD (0.05)	(0.5)	NS									

After-cooking darkening (ACD) rating based on a scale of 1 to 5; 1 = severe darkening, 5 = no after-cooking darkening. Five tubers rated per replication, four replications in each experiment. Tubers were peeled and dipped in a 0.5% solution of sodium bisulfite and cooked in an autoclave for 7 minutes and rated after 20 minutes. Blackspot (BS) determinations are based on approximately ten tubers per replication. Tubers were stored at 40° F and bruised between 1/27/97 and 2/4/97 and then stored at 55° F. Bruised areas were peeled and evaluated two days after impact. Each tuber received a blow in each of two locations about 1 to 2 cm from the stem end. The bruising was done by dropping a 175 gram weight a distance of 30 cm. The point of impact was marked by inking the base of the weight. Ratings are based on a scale of 1 to 6 with 1 = severe discoloration and 6 = no discoloration.

New York - Upstate

D.E. Halseth, W.L. Hymes

R.W. Porter, R.L. MacLaury

Program Scope:

Potato variety yield trials were conducted in four counties in upstate New York in 1997 in which a total of 27 named and 98 numbered clones were evaluated. Eight replicated yield trials were conducted at the Thompson Vegetable Research Farm at Freeville in Tompkins County on a Howard gravelly loam soil. Grower trials were conducted on mineral soils near Arkport (Steuben County) and Gainesville (Wyoming County) and on muck soil near Savannah (Wayne County). Trials at Freeville and Gainesville were irrigated, and all trials were grown using standard commercial cultural practices. As evaluation of potato lines with golden nematode (GN) resistance is of high priority, 8 named and 43 numbered entries in these trials have GN resistance. Marketable yield, tuber quality and appearance, maturity, storage life and chip processing potential are among the important characteristics which are evaluated.

Research Farm Results:

In the early maturity trial Andover yielded as well as the GN susceptible Superior, our industry standard for earliness. Andover also had fewer internal defects and much better tuber appearance ratings. AF1470-6 had the highest yield and lowest specific gravity. The medium maturity trial with 12 entries had 9 GN resistant clones and varieties with marketable yield above 300 cwt. per acre. Advanced Cornell clones NY102, NY109, and NY115 had marketable

yield above 350 cwt. per acre while B0564-9 and NY119 (P63-1) exceeded 400 cwt. per acre. NY115 had the fewest internal and external defects and the best tuber appearance. Itasca had the highest yield while MaineChip again the highest specific gravity. Of 15 entries in the medium-late trial, all 6 GN lines had marketable yields above 300 cwt. per acre, and NY101 topped out at 475 cwt. per acre. University of Maine-developed Quaggy Joe and AF1773-1 had the highest total yields and the lowest specific gravity. Atlantic and Snowden had the highest specific gravity, NY101 and Snowden the highest tuber set, and NY103 the best tuber appearance. The late maturity trial had 8 GN lines with marketable yield above 300 cwt. per acre, with NY112 reaching 456 cwt. per acre. Atlantic had the highest specific gravity, Lili the most external and internal defects and Allegany the best tuber appearance. In the advanced Cornell clone trial there were 12 new entries with excellent yield potential, ranging from 350 to 515 cwt. per acre marketable yield. All were lower than Atlantic in specific gravity and percentage of defects (except for R41-18) and higher in marketable yield. There are few GN resistant red-skinned clones currently available. NY118 (P49-19R) from the Cornell program and B0811-13 from the USDA were the only GN resistant red-skinned lines tested at Freeville in 1997. Both had very good marketable yields, as good as Chieftain (GN susceptible), which currently is the highest yielding red in the potato industry. NY118 has very attractive, uniform tubers, a very low percentage of defects, and a medium-red color similar to Chieftain. NorDonna had a dark red skin color similar to Redsen, but its marketable yield was 47 cwt. per acre higher. Only one GN russet-skinned clone was available for our russet yield trial. This clone, B9922-11, in the past has frequently

out-yielded the industry standard Russet Burbank in marketable yield, but this season was about equal in yield. It had the highest specific gravity and was ranked as the best in tuber appearance for the russets. Century Russet and Russet Norkotah continue to have higher marketable yields than Russet Burbank. There were 10 advanced "B" clones in the USDA trial compared to Atlantic and Monona. Seven clones had higher marketable yield than Atlantic, and one, B1240-14, had specific gravity reading of two units above Atlantic. B1240-14 and B1408-3 had significant hollow heart problems while B0856-4 and B1240-12 had the best tuber appearance ratings.

Grower County Trial Results:

Round red and white tablestock selections were grown in the muck soil grower trial in Wayne County. Yields were extremely high, with round white clones NY101, NY112 and Reba producing marketable yields above 400 cwt. per acre. Atlantic had the highest specific gravity, and NY109 the lowest. Again NY101 had the highest average tuber number (11.7 per foot of row) and Q3-12 the highest tuber weight (7.1 ounces). The red-skinned trial had a much broader range in marketable yield, from 172 cwt. to 512 cwt. per acre. While Chieftain typically had the highest total and marketable yields, clone NY118 was a close second in both categories. Redsen (GN susceptible) still produces the brightest red color which is demanded by the tablestock trade. The Steuben and Wyoming County chip processing trials were on mineral soils and had 11 GN clones (3 varieties and 8 breeding lines) yielding above 300 cwt. per acre marketable yield at both sites. The yellow-fleshed tablestock clone NY101 was included in these trials for dicing studies and had the highest yield at both sites, producing

534 cwt. per acre in the Wyoming County trial. B0178-34, Pike and Snowden had the highest specific gravity reaching 1.090 or higher at both trial sites. Snowden had hollow heart problems at both processing trial locations while NorValley (ND2417-6) had knobs and internal defects.

Table Heading Explanations:

Marketable yield in cwt/a was calculated from total yield less: external defects; undersize tubers (smaller than 1 7/8 inches); and oversize tubers (over 4 inch diameter).

Percent marketable yield represents the percentage that each entry's marketable yield is of that of a specified standard variety in that trial.

Size distribution percentage is the weight of a specific size category divided by total yield (including defects).

Specific gravity was taken by potato hydrometer.

Vine maturity ratings were on a nine point scale:

- 1 = all plants completely dead
(very early maturity)
- 9 = all plants full green
(very late maturity)

Tuber shape was classified using the code:

- 1 = round
- 2 = mostly round
- 3 = round to oblong
- 4 = mostly oblong
- 5 = oblong
- 6 = oblong to long
- 7 = mostly long

8 = long
9 = cylindrical

Tuber appearance was subjectively
evaluated using the scale:

1 = extremely rough or otherwise
unattractive
9 = very uniform and attractive

External defects were rated on all material
graded. Internal defects were made on a
subset of tubers, usually 10 per replication,
taken from size categories 3 and 4.

Acknowledgements:

Cooperative Extension Agents Carl Albers,
Steve Childs, and Carol MacNeil
coordinated grower trials.

Special thanks is given to grower-
cooperators: Murray Mahany and family,
Bob Martens and Jim McCormick.

Seed of new clones was provided by:
Robert Plaisted, Cornell University; Alvin
Reeves, University of Maine; Kathleen
Haynes, USDA; and Gregory Porter, NE184
Project. Donation of seed by Gary
Pryputniewicz and Kent Farms, Inc. is
greatly appreciated.

The Freeville crew is acknowledged for their
excellent cooperation in maintaining the
research farm plots.

Upstate New York Table 1. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the early maturity trial grown at Freeville, New York - 1997.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)			Mean Tuber		Spec. Grav.
			std					1 7/8 to 4 in.	2 1/2 to 4 in.	#/ft	wt(oz)		
				1	2	3	4					5	
Andover	480	413	95	2	26	51	17	4	94	68	7.2	6.9	79
AF1424-7	448	409	94	5	38	48	7	0	94	56	8.6	5.4	81
AF1437-1	437	387	89	4	36	51	9	1	95	59	7.9	5.7	62
AF1470-6	524	448	102	2	18	50	24	6	92	74	7.5	7.3	60
AF1475-20	363	320	73	2	30	48	18	2	96	66	6.1	6.2	74
AF1714-2	396	317	73	5	36	43	12	3	92	55	7.6	5.4	72
AF1764-9	475	414	95	3	45	45	5	2	96	51	9.3	5.3	76
Superior (std)	470	437	100	3	45	49	3	0	97	52	9.7	5.1	74
Waller-Duncan													
LSD (k=100)	44	51									0.8	0.7	1
C.V. (%)	(7)	(9)									(7)	(8)	(1)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Upstate New York Table 2. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the early maturity trial grown at Freeville, New York - 1997

Variety/Clone	Plant ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²			
	Mat. At Vinekill	Tuber Data ¹ Shape	Tuber Data ¹		Sun- Green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
			Appear.	Total							
Andover	5.1	1.0	8.0	8.2	6.6	1.0	0.6	0.0	0.0	0.0	0.0
AF1424-7	5.5	1.0	7.5	3.0	2.3	0.5	0.2	0.0	0.0	7.5	0.0
AF1437-1	6.6	1.0	6.4	6.6	1.4	0.3	4.9	0.0	0.0	0.0	5.0
AF1470-6	4.6	1.0	7.3	6.3	3.5	0.6	1.7	0.5	0.0	0.0	0.0
AF1475-20	7.3	1.0	6.9	7.6	4.7	1.6	1.3	0.0	2.5	2.5	0.0
AF1714-2	5.5	1.0	5.5	11.6	5.4	1.0	3.9	1.4	7.5	2.5	7.5
AF1764-9	5.0	1.0	6.5	8.4	3.1	2.3	2.8	0.2	0.0	0.0	5.0
Superior (Std)	2.1	1.0	5.4	4.5	2.3	1.8	0.4	0.0	2.5	5.0	0.0

¹See the standard NE184 rating system for a key to these ratings.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 3. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium maturity trial grown at Freeville, New York - 1997.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)			Mean Tuber #/ft	wt(oz)	Spec. Grav.
			1	2	3	4	5	1 7/8 to 4 in.	2 1/2 to 4 in.	3 1/4 to 4 in.			
Andover	444	376	98	3	21	54	17	6	91	71	6.8	6.8	78
Atlantic (std)	506	383	100	5	28	47	13	7	88	60	8.8	6.0	86
B0564-9	477	413	108	4	25	55	12	3	92	67	8.2	6.1	76
Itasca	588	511	133	4	38	48	8	2	94	56	11.1	5.5	74
MaineChip	450	353	92	4	33	51	10	2	94	61	8.3	5.7	91
Monona	418	365	95	4	34	49	10	2	94	59	8.0	5.5	65
NY102	449	392	102	7	51	37	4	1	92	41	10.1	4.6	84
NY109	477	358	93	3	20	44	22	12	85	65	7.1	7.0	62
NY115	416	373	97	6	35	48	10	2	93	58	8.0	5.4	72
NY119 (P63-1)	483	409	107	10	42	42	5	0	90	48	10.7	4.7	86
P32-3	345	308	80	4	35	52	8	1	95	60	6.4	5.6	78
Reba (NY87)	493	423	111	4	31	50	11	4	92	61	8.8	5.8	69
<u>Waller-Duncan</u>													
LSD (k=100)	39	52									0.7	0.5	3
C.V. (%)	(6)	(10)							(6)	(6)	(6)	(6)	(2)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant Date: May 2

Vine-Kill Date: August 27

Harvest Date: September 8

Upstate New York Table 4. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium maturity trial grown at Freeville, New York - 1997

Variety/Clone	Plant ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²			
	Mat. At Vinekill	Tuber Data ¹ Shape	Appear.	Total	Sun- Green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Andover	3.4	1.0	7.5	6.8	3.1	1.9	1.8	0.1	5.0	0.0	0.0
Atlantic (std)	7.4	1.0	6.0	13.0	8.4	2.4	1.1	1.1	5.0	7.5	7.5
B0564-9	2.9	2.0	7.1	5.6	4.0	1.0	0.0	0.6	20.0	2.5	0.0
Itasca	4.6	3.0	7.0	7.5	5.6	1.0	0.7	0.2	0.0	12.5	7.5
MaineChip	6.4	1.0	6.1	15.6	10.1	2.6	2.4	0.6	0.0	7.5	0.0
Monona	5.0	2.0	5.8	6.3	4.2	1.2	1.0	0.0	7.5	0.0	0.0
NY102	4.6	1.0	6.0	4.7	4.2	0.1	0.3	0.2	2.5	2.5	0.0
NY109	5.4	3.0	8.0	10.6	6.8	0.7	2.1	1.0	2.5	5.0	0.0
NY115	6.0	1.0	8.5	2.8	2.3	0.5	0.0	0.0	0.0	2.5	0.0
NY119 (P63-1)	5.0	1.0	6.4	5.6	4.2	0.5	0.1	0.8	20.0	2.5	0.0
P32-3	5.1	2.0	6.6	5.6	5.0	0.3	0.4	0.0	20.0	2.5	7.5
Reba	3.9	3.0	6.4	6.4	5.9	0.1	0.3	0.1	2.5	2.5	0.0

¹See the standard NE184 rating system for a key to these ratings.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 5. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium-late maturity trial grown at Freeville, New York - 1997.

Variety/Clone	Total Yield cwt/A	Mkt. Yield cwt/A	Yield % of std	Size Distrib. by Class ¹ (% of total yield)							Size Distrib. (%)				Mean Tuber wt(oz)	Spec. Grav.
				1 2 3 4 5							1 7/8 2 1/2 to 4 in. to 4 in.					
				1	2	3	4	5	1 7/8 to 4 in.	2 1/2 to 4 in.	#/ft	wt(oz)	Spec. Grav.			
AF1480-5	491	344	99	4	29	46	16	6	91	61	7.9	6.5	77			
AF1606-8	455	397	114	5	42	48	5	0	94	53	8.6	5.5	73			
AF1615-1	428	306	88	8	52	38	2	0	92	40	9.8	4.5	75			
AF1773-1	573	399	115	3	24	41	20	11	85	61	8.6	6.9	64			
Atlantic (std)	480	348	100	4	32	43	14	7	89	58	8.2	6.1	89			
Katahdin	448	319	92	4	26	53	12	5	90	64	7.8	6.0	72			
Kennebec	489	266	77	3	23	44	24	6	92	69	7.3	7.0	77			
Niska	440	319	92	4	45	38	11	1	94	49	8.5	5.4	75			
NorValley (ND2417-6)	423	313	90	6	47	31	12	4	90	42	9.0	4.9	78			
NY101	582	475	136	5	32	48	12	2	93	61	10.4	5.8	73			
NY103	455	340	98	4	36	50	8	2	94	58	8.1	5.8	72			
NY120 (Q8-2)	430	334	96	2	19	48	16	15	84	65	5.9	7.6	86			
Quaggy Joe	531	377	108	7	39	42	10	3	91	52	9.9	5.6	63			
Snowden	484	397	114	7	56	30	5	1	92	35	10.7	4.7	89			
Yukon Gold	367	302	87	4	31	48	15	2	94	64	6.1	6.3	80			
Waller-Duncan																
LSD (k=100)	66	74									1.1	0.8	2			
C.V. (%)	(10)	(14)									(10)	(10)	(2)			

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Upstate New York Table 6. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium-late maturity trial grown at Freeville, New York - 1997

Variety/Clone	Plant ¹		External Tuber Defects (%)						Int. Tuber Defects (%) ²		
	Mat. At Vinekill	Tuber Data ¹		Total	Sun-Green	Mis-shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
		Shape	Appear.								
AF1480-5	5.1	6.0	5.3	20.5	15.5	3.1	0.3	1.6	25.0	2.5	5.0
AF1606-8	3.1	2.8	6.4	7.0	5.3	0.5	1.0	0.3	0.0	7.5	0.0
AF1615-1	5.5	3.0	6.1	20.6	19.3	0.8	0.2	0.3	0.0	10.0	0.0
AF1773-1	7.1	4.0	7.1	15.5	11.6	1.8	1.8	0.2	0.0	5.0	0.0
Atlantic (std)	4.6	2.0	6.3	16.9	10.2	3.9	2.0	0.8	2.5	7.5	0.0
Katahdin	5.3	2.0	5.8	19.7	18.3	0.3	0.6	0.5	0.0	7.5	0.0
Kennebec	2.5	6.0	4.1	37.3	24.5	4.9	7.4	0.5	2.5	5.0	5.0
Niska	2.3	6.0	5.1	20.9	7.4	2.5	11.0	0.0	0.0	10.0	0.0
NorValley (ND2417-6)	3.7	1.0	6.7	16.2	8.4	3.5	2.4	1.9	0.0	6.7	0.0
NY101	6.4	1.0	6.9	11.2	10.9	0.3	0.0	0.0	0.0	5.0	5.0
NY103	3.5	1.0	8.0	19.4	17.7	1.2	0.4	0.0	0.0	2.5	2.5
NY120 (Q8-2)	5.4	1.0	5.5	6.8	4.3	1.5	0.6	0.3	0.0	27.5	0.0
Quaggy Joe	1.9	3.0	6.6	19.7	13.0	4.0	2.3	0.4	0.0	5.0	2.5
Snowden	3.3	1.0	4.5	9.5	7.6	0.9	0.8	0.2	5.0	10.0	0.0
Yukon Gold	2.4	3.0	6.8	12.2	5.3	3.2	1.8	2.0	7.5	2.5	2.5

¹See the standard NE184 rating system for a key to these ratings.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 7. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the late maturity trial grown at Freeville, New York - 1997.

Variety/Clone	Total Yield cwt/A	Mkt. Yield cwt/A	Yield std	% of	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)			Mean Tuber #/ft	wt(oz)	Spec. Grav.
					1	2	3	4	5	1 7/8 to 4 in.	2 1/2 to 4 in.				
Allegany	522	386	120	5	41	44	9	2	94	53	9.9	5.5	80		
Atlantic (std)	464	322	100	5	29	44	16	7	88	60	7.9	6.1	89		
B0564-8	379	309	96	10	46	39	4	1	89	43	8.4	4.7	73		
Katahdin	463	347	108	4	27	49	16	3	93	65	7.6	6.3	72		
Lili	528	353	110	10	48	37	5	0	90	42	12.3	4.4	76		
Monona	393	316	98	4	34	50	8	4	92	57	7.3	5.6	64		
NY110	404	371	115	2	29	57	10	2	96	67	6.6	6.4	76		
NY112	510	456	142	4	32	54	8	2	94	62	8.9	6.0	79		
Pike	488	401	124	6	52	37	3	2	92	40	10.0	5.1	86		
P21-2	443	394	122	5	43	41	9	1	94	50	8.9	5.2	74		
P73-2	419	335	104	6	42	42	9	1	93	51	8.6	5.1	83		
Q3-12	359	270	84	3	23	44	15	14	83	59	5.3	7.0	79		
Snowden	462	364	113	6	43	39	10	3	91	48	8.9	5.4	87		
SW 88113	533	404	125	10	48	35	6	1	88	40	12.1	4.6	72		
Waller-Duncan															
LSD (k=100)	44	51									0.9	0.6	2		
C.V. (%)	(7)	(10)									(8)	(8)	(2)		

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Upstate New York Table 8. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the late maturity trial grown at Freeville, New York - 1997

Variety/Clone	Plant ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
	Mat. At Vinekill	Tuber Data ¹ Shape	Sun- Green		Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
			Total	Appear.						
Allegany	3.5	1.0	19.8	7.0	0.6	2.9	1.0	0.0	2.5	0.0
Atlantic (std)	3.8	1.0	19.1	6.3	3.2	2.7	1.6	5.0	10.0	0.0
B0564-8	1.0	1.0	7.6	6.6	1.2	0.5	2.2	0.0	2.5	5.0
Katahdin	3.4	2.3	17.6	5.1	0.7	0.4	0.4	2.5	7.5	0.0
Lili	4.8	6.0	23.2	5.0	7.2	4.1	0.1	0.0	17.5	2.5
Monona	1.3	4.0	11.3	5.0	3.7	0.3	0.0	5.0	10.0	0.0
NY110	1.5	3.0	4.4	6.0	2.5	0.0	0.0	0.0	7.5	0.0
NY112	5.6	1.3	4.5	6.9	0.4	0.0	0.3	0.0	2.5	2.5
P21-2	1.9	2.0	5.0	5.6	2.1	1.7	0.0	0.0	7.5	0.0
P73-2	1.6	6.0	13.4	5.5	4.2	0.1	0.5	0.0	10.0	2.5
Pike	4.0	1.0	9.8	6.8	3.3	0.1	0.2	0.0	5.0	0.0
Q3-12	3.4	2.9	6.8	6.5	0.8	1.4	0.5	0.0	2.5	0.0
Snowden	4.8	1.0	12.6	4.0	3.3	0.3	0.4	0.0	15.0	0.0
SW 88113	1.0	2.0	12.3	5.9	3.0	0.9	0.2	2.5	7.5	0.0

¹See the standard NE184 rating system for a key to these ratings.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 9. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the Cornell advanced clones trial grown at Freeville, New York - 1997.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib.(%)			Mean Tuber #/ft	wt(oz)	Spec. Grav.
			1	2	3	4	5	1 7/8 to 4 in.	2 1/2 to 4 in.				
Allegany	464	331	99	3	22	51	18	7	90	69	6.9	7.0	75
Atlantic (std)	463	334	100	4	24	44	19	8	88	63	7.0	6.9	90
Kanona	414	287	86	4	23	45	19	9	87	64	6.5	6.6	74
R17-2	373	352	105	3	37	54	6	0	97	60	6.9	5.7	71
R17-7	598	507	152	8	45	39	7	2	91	46	12.5	5.0	71
R17-11	404	372	111	3	37	49	9	2	95	58	7.2	5.9	66
R17-19	392	350	105	4	35	49	10	2	93	58	7.2	5.7	67
R17-20	424	377	113	6	60	31	3	0	94	34	9.5	4.6	79
R17-106	607	515	154	8	46	42	3	0	92	45	13.4	4.7	69
R18-4	426	360	108	10	55	33	2	0	90	36	9.8	4.5	80
R18-6	404	368	110	4	41	45	8	2	94	53	7.6	5.6	68
R19-20	446	384	115	4	32	54	9	1	95	63	7.6	6.1	78
R41-11	539	497	149	5	48	44	3	1	94	46	11.1	5.1	69
R41-18	559	390	117	3	22	52	16	6	90	68	8.4	6.9	68
R170-6	499	444	133	4	41	48	5	2	94	54	9.4	5.5	74
Waller-Duncan													
LSD (k=100)	40	43									0.9	0.6	2
C.V. (%)	(7)	(8)									(8)	(8)	(2)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Upstate New York Table 10. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the Cornell advanced clones trial grown at Freeville, New York - 1997

Variety/Clone	Plant ¹ Mat. At Vinekill	External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Tuber Data ¹		Sun- Green		Mis- shapen		Holl. Heart	
		Shape	Appear.	Total	Growth	Cracks	Rot	Vasc. Disc.	Int. Nec.
Allegany	6.8	1.0	7.8	18.9	15.2	0.5	3.2	0.0	0.0
Atlantic (std)	6.6	1.0	6.0	15.5	9.1	1.9	3.2	1.3	7.5
Kanona	4.8	1.0	6.5	17.7	12.3	0.3	1.7	3.4	2.5
R17-2	5.3	1.0	6.4	2.4	1.5	0.0	0.2	0.6	0.0
R17-7	4.1	1.0	7.3	6.2	5.7	0.1	0.2	0.2	0.0
R17-11	5.1	1.0	7.5	3.2	1.2	0.0	1.9	0.1	2.5
R17-19	3.9	2.0	6.8	4.3	3.6	0.7	0.0	0.0	0.0
R17-20	4.0	1.0	7.0	4.6	4.3	0.2	0.1	0.0	0.0
R17-106	4.9	1.0	7.4	7.0	6.5	0.3	0.1	0.2	0.0
R18-4	2.9	1.0	7.4	5.8	3.2	0.9	1.4	0.2	0.0
R18-6	1.5	1.0	6.6	2.4	0.8	0.6	0.8	0.3	0.0
R19-20	4.4	1.0	7.0	9.0	4.6	1.4	2.7	0.4	0.0
R41-11	1.6	1.0	7.4	2.1	1.6	0.1	0.1	0.4	5.0
R41-18	3.1	1.0	7.0	20.4	13.9	1.1	4.6	0.8	2.5
R170-6	3.3	1.0	6.3	5.4	4.2	1.0	0.2	0.0	0.0

¹See the standard NE184 rating system for a key to these ratings.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 11. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the red-skinned variety trial grown at Freeville, New York - 1997.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)			Mean Tuber #/ft wt(oz)	Spec. Grav.	
			1	2	3	4	5	1 7/8 to 4 in.	2 1/2 to 4 in.				
B0811-4	273	224	57	16	78	5	0	0	84	5	8.6	3.3	81
B0811-13	436	399	102	6	54	37	3	0	94	40	9.6	4.7	70
Chieftain (std)	515	390	100	4	29	45	18	4	92	63	8.9	6.0	66
NorDonna	445	377	97	9	49	39	3	0	91	42	10.1	4.6	69
NY118 (P49-19R)	474	394	101	6	33	44	15	2	92	59	8.9	5.5	63
Redsen	373	330	85	8	51	35	7	0	92	42	8.6	4.5	64
Waller-Duncan													
LSD (k=100)	44	45									N.S.	0.4	2
C.V. (%)	(8)	(9)									(11)	(6)	(2)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant Date: May 1

Vine-Kill Date: August 27

Harvest Date: September 9

Upstate New York Table 12. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the red-skinned variety trial grown at Freeville, New York - 1997

Variety/Clone	Plant ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²			
	Mat. At Vinekill	Tuber Data ¹ Shape	Total	Sun- Green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.	
B0811-4	1.0	2.0	4.0	1.6	0.6	0.9	0.1	0.0	0.0	12.5	0.0
B0811-13	2.6	1.0	4.3	2.7	0.9	1.3	0.5	0.0	0.0	2.5	2.5
Chieftain (Std)	5.3	2.0	7.0	16.1	6.9	1.1	7.6	0.5	2.5	2.5	2.5
NorDonna	6.8	1.0	7.8	6.1	4.7	0.9	0.6	0.0	0.0	5.0	0.0
NY118 (P49-19R)	6.8	3.0	7.9	8.8	6.0	1.3	1.6	0.0	0.0	0.0	0.0
Redsen	1.4	1.0	8.0	3.6	2.0	0.3	0.9	0.3	0.0	10.0	0.0

¹See the standard NE184 rating system for a key to these ratings.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 13. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the russet variety trial grown at Freeville, New York - 1997.

Variety/Clone	Total Yield cwt/A	Mkt. Yield cwt/A	Yield % of std	Size Distrib. by Class ¹ _____(% of total yield)_____					Size Distrib. (%) 4 to over 12 oz 8 oz 12 oz					Mean Tuber ____#/ft____ wt(oz)		Spec. Grav.
				1	2	3	4	5	4 to over 12 oz	8 oz	12 oz	#/ft	wt(oz)			
B0915-3	379	223	89	9	36	34	15	6	70	55	21	5.4	7.3	78		
B1004-8	313	214	85	23	54	21	3	0	75	24	3	6.9	4.7	82		
B9922-11	351	245	98	12	46	30	8	4	76	43	13	6.1	5.9	89		
Century Russet	489	339	135	16	47	26	9	2	73	37	11	9.0	5.7	84		
Rus. Burbank (std)	460	251	100	14	43	29	10	4	72	43	14	8.2	5.8	85		
Russet Norkotah	382	258	103	25	53	16	5	1	69	23	6	8.3	4.8	73		
Waller-Duncan																
LSD (k=100)	31	53										0.7	0.3	2		
C.V. (%)	(6)	(14)										(7)	(4)	(2)		

¹Size classes: 1 = under 4 oz, 2 = 4 to 8 oz, 3 = 8 to 12 oz, 4 = 12 to 16 oz, 5 = over 16 oz

Plant Date: May 6

Vine-Kill Date: September 10

Harvest Date: September 22

Upstate New York Table 14. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the russet variety trial grown at Freeville, New York - 1997

Variety/Clone	Plant ¹		External Tuber Defects (%)							Int. Tuber Defects (%) ²		
	Mat. At Vinekill	Tuber Data ¹ Shape	Appear.	Total	Sun-Green	Mis-shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.	
B0915-3	2.5	6.0	5.4	25.9	5.9	5.7	12.7	1.5	7.5	0.0	2.5	
B1004-8	3.3	6.0	7.1	9.4	3.7	0.7	5.0	0.0	0.0	0.0	2.5	
B9922-11	2.9	5.0	7.6	14.2	4.4	7.5	1.5	0.9	7.5	0.0	0.0	
Century Russet	5.3	6.0	4.3	13.2	6.4	5.6	0.0	1.2	2.5	0.0	0.0	
Rus. Burbank (std)	5.0	7.0	5.0	27.8	4.2	21.0	2.5	0.1	5.0	0.0	0.0	
Russet Norkotah	1.1	7.0	6.4	6.9	2.9	3.6	0.3	0.0	5.0	0.0	2.5	

¹See the standard NE184 rating system for a key to these ratings.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 15. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the USDA advanced clone trial grown at Freeville, New York - 1997.

Variety/Clone	Total Yield cwt/A	Mkt. Yield cwt/A	Yield % of std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)			Mean Tuber wt(oz)	Spec. Grav.
				1	2	3	4	5	1 7/8 to 4 in.	2 1/2 to 4 in.	#/ft		
Atlantic (std)	398	292	100	3	31	41	16	8	89	58	6.3	6.6	89
B0766-3	393	334	114	4	37	50	9	1	95	59	7.2	5.7	82
B0856-4	547	431	148	3	21	50	18	9	89	68	7.8	7.3	71
B1206-10	370	238	81	3	27	42	18	10	87	60	5.8	6.7	74
B1214-7	491	279	96	1	14	33	25	27	72	58	5.5	9.3	86
B1240-12	338	296	101	6	48	39	7	0	94	46	7.2	4.9	84
B1240-14	427	363	124	5	41	46	7	1	95	53	8.2	5.4	91
B1248-5	493	429	147	5	41	45	8	1	94	53	9.4	5.4	78
B1375-14	252	208	71	10	57	30	3	0	90	33	6.3	4.1	82
B1408-3	407	310	106	3	28	54	11	3	93	65	6.7	6.3	87
B1429A-6	403	361	124	5	50	43	1	1	94	44	8.6	4.9	80
Monona	362	284	97	3	27	47	15	7	90	63	6.2	6.1	67
<u>Waller-Duncan</u>													
LSD (k=100)	38	42									0.8	0.5	2
C.V. (%)	(7)	(10)									(8)	(7)	(2)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant Date: May 2

Vine-Kill Date: August 29

Harvest Date: September 2

Upstate New York Table 16. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the USDA advanced clone trial grown at Freeville, New York - 1997

Variety/Clone	Plant ¹		External Tuber Defects (%)						Int. Tuber Defects (%) ²			
	Mat. At Vinekill	Tuber Data ¹ Shape	Appear.	Total	Sun- Green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.	
Atlantic (std)	6.5	1.0	6.4	15.6	12.3	0.3	2.2	0.7	5.0	2.5	2.5	
B0766-3	2.4	2.0	5.0	10.5	6.9	0.5	3.1	0.0	7.5	5.0	10.0	
B0856-4	2.9	1.0	7.9	9.8	7.7	0.3	1.5	0.2	0.0	0.0	0.0	
B1206-10	2.9	1.0	5.1	22.2	8.7	2.3	11.1	0.3	5.0	2.5	2.5	
B1214-7	6.1	3.0	4.3	14.8	9.7	2.4	1.6	1.1	0.0	0.0	0.0	
B1240-12	4.1	1.0	7.9	6.2	4.7	0.6	1.0	0.0	0.0	10.0	10.0	
B1240-14	5.8	1.0	7.4	9.5	7.1	1.4	0.4	0.7	30.0	0.0	0.0	
B1248-5	1.4	1.0	7.8	7.2	5.9	0.4	0.7	0.2	0.0	2.5	0.0	
B1375-14	1.4	1.0	6.0	7.2	4.3	0.6	1.7	0.6	0.0	7.5	2.5	
B1408-3	7.5	1.0	6.8	17.4	13.1	0.9	2.7	0.7	45.0	2.5	7.5	
B1429A-6	2.5	1.0	7.5	4.8	3.9	0.3	0.0	0.6	10.0	0.0	2.5	
Monona	2.9	3.0	4.8	11.6	6.3	1.4	3.0	0.9	0.0	10.0	0.0	

¹See the standard NE184 rating system for a key to these ratings.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 17a. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for white-skinned varieties grown on muck soil in Wayne County near Savannah, New York - 1997

Variety/Clone	Total Yield	Mkt. Yield			Size Distrib. ¹			Mean Tuber		Pct. External ²				Pct. Internal ³			
		cwt/A	% of	std	1	2	3	#/ft	wt(oz)	S	K	G	R	H	V	N	Spec.
Andover	400	cwt/A	356	94	7	90	3	8.1	5.2	1	0	0	0	5	0	0	76
Atlantic	426		353	93	6	86	7	6.9	6.5	2	1	0	0	5	0	0	79
Katahdin (std)	433		379	100	5	93	2	7.9	5.7	6	0	0	0	0	0	0	69
Monona	402		346	91	4	91	5	6.5	6.4	4	1	0	0	0	0	0	65
NY101	539		484	128	7	93	1	11.7	4.8	3	0	0	0	0	0	0	69
NY103	363		295	78	10	88	2	8.0	4.8	5	1	1	0	0	0	0	74
NY109	397		327	86	4	87	9	6.5	6.3	4	1	0	0	0	0	0	64
NY110	421		389	103	5	93	2	8.4	5.2	0	0	0	0	0	0	0	73
NY112	524		444	117	6	92	2	10.2	5.4	5	2	0	0	5	0	0	73
NY115	306		257	68	11	89	0	6.9	4.6	4	1	0	0	0	0	0	74
P21-2	470		396	104	5	85	10	7.6	6.4	0	0	0	0	0	0	0	70
P32-3	320		274	72	7	92	1	7.0	4.7	6	0	0	0	0	0	0	78
Penta	461		372	98	12	88	0	11.2	4.3	2	5	0	0	0	0	0	71
Q3-12	386		312	82	4	83	13	5.7	7.1	2	0	0	0	0	0	0	74
Quaggy Joe	388		298	79	9	84	7	8.0	5.1	5	2	0	0	0	0	0	65

(Continued on Next Page)

Upstate New York Table 17a. - CONT. - Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for white-skinned varieties grown on muck soil in Wayne County near Savannah, New York - 1997

Variety/Clone	Total Yield		Mkt. Yield		Size Distrib. ¹			Mean Tuber		Pct. External ²				Pct. Internal ³				
	cwt/A	Yield	cwt/A	std	%	(% of tot. yld.)			#/ft	wt(oz)	Tuber Defects				Tuber Defects			
						1	2	3			S	K	G	R	H	V	N	Grav.
Reba	466		438	116		3	96	1	8.1	6.0	2	0	0	0	0	0	71	
Sante	430		330	87		13	86	2	10.1	4.4	3	6	1	0	0	10	74	
Superior	372		335	89		5	92	2	7.3	5.3	1	1	0	0	0	0	73	

¹Size classes: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial had two replications

Plant Date: May 12 Vinekill Dates : August 30 and September 7 Harvest Date: September 26
Fertilizer: 700 lb/A 7.95N-7.8P₂O₅-30.5K₂O-1.89Mg-7.05S-0.49Mn applied at planting.

Side-dressed 500 lb/A 22-0-20.

Vinekill: 1 pt/A Diquat on August 30; 1 qt/A Gramoxone on September 7.

Upstate New York Table 17b. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for red-skinned varieties grown on muck soil in Wayne County near Savannah, New York - 1997

Variety/Clone	Total Yield	Mkt. Yield		Size Distrib. ¹			Mean Tuber		Pct. External ²				Pct. Internal ³				
		cwt/A	% of std	1	2	3	#/ft	wt(oz)	Tuber Defects				Tuber Defects				
									S	K	G	R	H	V	N	Grav.	
B1491-5	394	296	58	21	79	0	5.8	7.1	3	1	0	0	0	0	0	0	74
B1491-10	359	260	51	22	78	0	12.5	3.0	3	2	0	0	0	0	0	0	56
B1492-12	275	172	34	36	64	0	12.0	2.4	1	0	0	0	0	0	0	0	72
B1495-6	296	237	46	17	83	0	9.1	3.4	2	0	0	0	0	0	0	0	70
B1522-1	507	379	74	10	90	0	10.2	5.2	1	13	1	0	0	0	0	0	66
B1522-5	251	227	44	9	91	0	5.6	4.7	0	0	0	0	0	0	0	0	61
B1523-4	455	393	77	8	88	4	9.8	4.8	2	0	0	0	0	0	0	0	68
Chieftain (std)	582	512	100	5	95	1	10.7	5.7	4	1	1	0	0	0	5	0	67
Dk. Red Norland	448	383	75	8	92	0	11.2	4.2	4	2	0	0	0	0	0	0	65
NorDonna	437	355	69	9	91	0	4.3	10.5	7	3	1	0	0	0	0	0	67
NY118 (P49-19R)	523	448	87	8	91	1	11.4	4.8	4	1	0	0	0	0	0	0	66
Redsen	398	296	58	17	82	1	11.5	3.6	4	3	0	0	0	0	0	0	64

¹Size classes: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial had two replications, except there was only one plot of B1491-5, B1491-10, B1492-12, B1495-6.

Plant Date: May 12

Vinekill Dates : August 30 and September 7

Harvest Date: September 26

Fertilizer: 700 lb/A 7.95N-7.8P₂O₅-30.5K₂O-1.89Mg-7.05S-0.49Mg applied at planting.

Side-dressed 500 lb/A 22-0-20.

Vinekill: 1 pt/A Diquat on August 30; 1 qt/A Gramoxone on September 7

Upstate New York Table 18. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Steuben County mineral soil variety trial grown near Arkport, New York - 1997

Variety/Clone	Total		Mkt. Yield		Size Distrib. ¹				Mean Tuber		Pct. External ²				Pct. Internal ³			
	cwt/A	Yield	cwt/A	% of std	1	2	3	3	#/ft	wt(oz)	S	K	G	R	H	V	N	Spec.
					(% of tot. yld.)						Tuber Defects				Tuber Defects			
Atlantic (std)	403		289	100	3	76	21		5.7	7.8	2	1	0	0	5	0	0	87
B0178-34	393		344	119	7	91	2		8.5	5.1	2	2	0	0	0	0	0	99
B0564-8	389		347	120	9	91	0		9.5	4.5	1	0	0	0	0	0	0	86
Kanona	437		344	119	3	84	13		7.1	6.8	5	0	0	0	0	0	0	82
NorValley (ND2417-6)	414		324	112	13	85	2		11.2	4.1	2	5	0	0	10	0	0	76
NY101	506		406	140	5	85	10		8.7	6.4	3	1	0	0	0	0	0	73
NY102	428		389	135	4	94	2		8.5	5.6	2	1	0	0	0	0	0	87
NY103	426		384	133	5	93	2		7.8	6.0	2	1	0	0	0	0	0	79
NY112	461		386	134	6	86	8		8.2	6.2	2	0	0	0	0	0	0	86
NY115	369		279	97	5	82	13		5.6	7.3	5	1	0	0	0	0	0	85
NY119 (P63-1)	339		285	99	6	88	5		6.8	5.5	4	0	0	0	0	0	0	89
NY120 (Q8-2)	438		383	133	3	90	7		6.8	7.1	1	1	0	0	0	0	0	88
P32-3	321		238	82	4	82	14		5.1	7.0	6	1	0	0	20	0	0	88
P73-2	347		298	103	11	88	1		8.1	4.7	1	1	0	0	0	0	0	85
Q3-12	401		317	110	3	81	16		6.3	7.0	2	0	0	0	0	0	0	81

(Continued on Next Page)

Upstate New York Table 18. - CONT. - Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Steuben County mineral soil variety trial grown near Arkport, New York - 1997

Variety/Clone	Total Yield		Mkt. Yield			Size Distrib. ¹			Mean Tuber		Pct. External ²				Pct. Internal ³			
	cwt/A	Yield	cwt/A	% of std	(% of tot. yld.)			#/ft	wt(oz)	Tuber Defects				Tuber Defects				
					1	2	3			S	K	G	R	H	V	N		
Pike	400		359	124	9	90	1	10.3	4.3	1	0	0	0	0	0	0	95	
Reba	445		388	134	3	89	8	7.8	6.3	2	0	0	0	0	0	0	83	
Snowden	439		404	140	5	94	1	9.3	5.2	1	0	0	0	15	0	0	94	

¹Size classes: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial had two replications, except only one plot was harvested of Atlantic, B0178-34, B0564-8, Kanona, NorValley (ND2417-6), NY101, NY103, NY115, P32-3, NY119 (P63-1), and Q3-12.

Plant Date: May 23

Vinekill Date : September 9, 15

Harvest Date: October 6

Fertilizer: 1500 lb/A 8-16-8 at planting. 100 lb/A ammonium nitrate sidedressed on June 28

Vinekill: Two applications of Diquat 1 pt/A (September 9 and 15)

Upstate New York Table 19. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Wyoming County mineral soil variety trial grown near Gainesville, New York - 1997

Variety/Clone	Total		Mkt. Yield		Size Distrib. ¹				Mean Tuber		Pct. External ²				Pct. Internal ³			
	Yield	cwt/A	cwt/A	% of std	1	2	3	#/ft	wt(oz)	S	K	G	R	H	V	N	Spec.	Grav.
Atlantic (std)	437	350	100	7	88	6	7.9	6.1	4	4	0	0	0	0	0	0	93	
B0178-34	425	378	108	4	92	4	7.4	6.3	2	0	1	0	0	0	0	0	90	
B0564-8	414	367	105	11	89	0	7.7	5.9	1	0	0	0	0	0	0	0	82	
Kanona	458	370	106	3	83	14	6.5	7.8	2	0	1	0	0	0	0	0	82	
NorValley (ND2417-6)	429	366	105	9	91	0	9.6	4.9	4	3	0	0	0	0	10	0	79	
NY101	584	534	152	5	93	2	9.7	6.6	2	0	0	0	0	0	0	0	79	
NY102	448	414	118	6	94	0	9.0	5.5	2	0	0	0	0	0	0	0	91	
NY103	457	397	114	6	93	1	8.6	5.9	4	2	0	0	0	0	0	0	80	
NY112	573	508	145	4	90	6	9.6	6.6	1	0	0	0	0	0	0	0	86	
NY115	377	314	90	6	88	6	7.0	6.0	4	1	0	0	0	0	0	0	85	
NY119 (P63-1)	394	338	97	10	89	2	9.1	4.8	3	0	0	0	0	5	0	0	93	
NY120 (Q8-2)	481	395	113	2	83	15	6.1	8.8	1	0	0	0	0	0	0	0	89	
P32-3	327	288	82	7	92	2	6.7	5.4	1	0	2	0	0	0	0	0	86	
P73-2	410	346	99	11	88	1	9.5	4.8	3	1	0	0	0	0	0	0	89	
Q3-12	433	331	95	4	82	14	6.6	7.3	6	0	0	0	0	0	0	0	85	

(Continued on Next Page)

Upstate New York Table 19. - CONT. - Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Wyoming County mineral soil variety trial grown near Gainesville, New York - 1997

Variety/Clone	Total		Mkt. Yield		Size Distrib. ¹			Mean Tuber		Pct. External ²			Pct. Internal ³		
	Yield		% of		(% of tot. yld.)			wt(oz)		Tuber Defects			Tuber Defects		
	cwt/A	std	cwt/A	std	1	2	3	#/ft	wt(oz)	S	K	G	R	H	Spec. Grav.
Pike	425		397	113	6	94	0	8.7	5.4	1	0	0	0	0	92
Reba	476		402	115	3	88	8	7.9	6.6	4	0	0	0	0	77
Snowden	502		439	125	5	91	4	9.3	5.9	3	1	0	0	15	90

¹Size classes: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial had two replications, except only one plot was planted of B0178-34, B0564-8,

NorValley (ND2417-6), and P32-3.

Plant Date: May 7

Vinekill Dates : September 13,18,22

Harvest Date: October 3

Fertilizer: 690 lb/A 13.7-0-21.5 broadcast before planting. 896 lb/A 8-20-8-2Mg-2Zn liquid applied at planting. Top-dressed 60 lb/A N at hilling/cultivation.

Vine-kill: 1 qt Desiccate on September 13; 1 pt Diquat on both September 18 and 22.

North Carolina

G. Craig Yencho and William Hines¹

Introduction

This work is part of a continuing project designed to evaluate new potato cultivars and advanced clones for potential use by the North Carolina potato industry.

Cooperating Breeding Projects

Dr. Dave Douches, Michigan State University, East Lansing, MI

Dr. Kathleen Haynes, USDA/ARS Beltsville, MD

Dr. Richard Novy, North Dakota State University, Fargo, ND

Dr. Robert Plaisted, Cornell University, Ithaca, NY

Dr. Al Reeves, University of Maine, Presque Isle, ME

Cooperating NC Agricultural Extension Agents

Tom Campbell, Elizabeth City, Pasquotank Co.

Fred May, Bayboro, Pamlico Co.

Richard Rhodes, Columbia, Tyrrell Co.

NC Research Station and On-farm Cooperators and Locations

Bright Farms, Weeksville, NC, Pasquotank Co.

Durwood Cooper Farms, Gumneck, NC, Tyrrell Co.

McCotter Farms, Vandemere, NC, Pamlico Co.

Tidewater Research Station (NC Dept.

Agric.)/Vernon G. James Research and Extension Center, (NCSU), Plymouth, NC, Washington Co. (TRS/VGJREC)

Upper Mountain Research Station (NCDA), Laurel Springs, NC, Ashe Co. (UMRS)

Industry Cooperators

Hettema Seed Potatoes, Fredericton, N.B. Canada

Frito Lays Inc., Rhinelander, WI

Wise Foods Inc., Berwick, PA

Methods

Eastern tests were planted in March and harvested in June and July with growing days between 106 and 110 days depending on location and crop status. The western trial was planted in May and harvested in August with 113 growing days. All entries were planted in a randomized complete block design with 4 replications (i.e. 4 plots per entry), excepting the unreplicated, preliminary evaluation trial, which had only one plot per clone. Each plot consisted of 1 row with 28 hills spaced 9 inches apart. Spacing between rows was 38-inches at all sites, except UMRS which was 45 inches. Fertilizer, weed and pest control practices were in accordance with those practiced by the cooperators. Plots were dug using a single row digger and hand harvested. Grower trials were graded using a portable Lockwood Grader which sorts 2 grades; 1's = $>1\ 7/8''$ and 2's = $>7/8''$ to $1\ 7/8''$ which are roughly equivalent to USDA sizes A and B grouped together, and USDA size C, respectively. At the TRS/VGJREC, potatoes were graded to three classes: 1's = $\geq 1\ 7/8''$, 2's = $1\ 1/2''$ to $1\ 7/8''$ and 3's = $\leq 1\ 1/2''$ roughly equivalent to USDA A's, B's and C's, respectively. Culls were weighed separately in all trials. After grading and weighing plots, 40 marketable tubers (10 tubers/replication) were sampled randomly from each entry. The tubers were cut and scored for the presence or absence of hollow heart, heat necrosis and any other internal defects. Subsamples of marketable tubers were also taken from each plot and bulked by entry for specific gravity readings and chipping tests. Specific gravity was determined using the weight-in-air/weight-in-water method, and chip colors were provided by Wise Foods, Berwick, PA.

Results

The season began with warmer, drier weather than normal for most potato production areas in eastern NC. The favorable warm February-March conditions were counterbalanced, however, by abnormally cool and dry growing conditions during April to May.

A total of 143 clones were evaluated this year. The data for each trial are summarized in Tables 1-8. Each table has two parts, the first being devoted to yield and specific gravity information (a), and the second relating potato plant and tuber quality parameters and chip color score (b). For each clone evaluated, tuber quality and appearance comments were made during harvest and grading, and while specific gravity measurements were being made. These notes are contained in the second table and a

¹ Assistant Professor and Research Technician, respectively. Department of Horticultural Science, Vernon G. James Research and Extension Center, North Carolina State University, 207 Research Station Road, Plymouth, NC 27962

description of the rating scales is given in Appendix 1. It should be noted that the Carlita and Adora entries arrived late and were planted later than the other entries in the McCotter Farm trial (7 days late) and the Bright Farm trial (2 days late).

Comments on some of the more promising clones, which have been evaluated for more than two years in at least three locations in NC, are provided below. Please note, however, that many other clones may have performed well in 1998 (see individual tables). If they are not specifically mentioned below, it most likely indicates that, as of yet, there is not sufficient information to comment on them.

Comments on promising, newly released varieties and advanced clones grown in NC's environment

Andover was recently released from the Cornell University, New York breeding program where it was tested as **NY E55-44**. It is an early to medium maturity, slightly netted, buff-skinned, very round variety. It produces uniform, medium-sized potatoes that are very nice in appearance with good skin and few defects. Over four trials in 1996 its average marketable yield was 150% of Atlantic, while in five trials in 1995 its marketable yield was 85% of Atlantic. In 1997, its marketable yield was 63% of Atlantic, and over all trials (11) its marketable yield has been 116% of 'Superior'. It chipped very well at all sites with chip scores of 2-3. Its gravity is only slightly lower than that of Atlantic. Heat necrosis and hollow heart are not problems. It is resistant to golden nematode and common scab. Andover is a very promising chipping variety, but adverse (drought and severe heat stress) growing conditions may significantly impact its yield in some years. This tendency has also been noted in NJ, NY, PA and VA. We plan to evaluate this clone next year at three sites, and would be interested in having a few growers try it out on a limited basis in 1998-1999.

Quaggy Joe was recently released by the University of Maine breeding program. It was evaluated in NC as **AF1470-17**. **Quaggy Joe** is a medium maturing, white-skinned, round, tablestock selection with shallow, pink eyes and white flesh. It does not chip. It produces medium to large-sized potatoes that are nice in appearance. Its average marketable yield in NC over three years was 108% of Atlantic. It is resistant to net necrosis, blackspot and shatter bruising, and shows a moderate reaction to early blight, *Verticillium* wilt, and *Fusarium* tuber rot. It is susceptible to scab and hollow heart, and is

metribuzin sensitive. Unless requested, we will not be evaluating this variety in 1998.

Reba was recently released from the Cornell University, New York breeding program where it was tested as **NY 87**. Reba is a medium to late season, round, white, smooth-skinned chipstock and tablestock potato. Over seven trials from 1995-1997 at four sites its average marketable yield was 83% of Atlantic. It chipped very well at all sites with scores of 3-4, and its gravity is slightly lower than Atlantic. We have seen heat necrosis in this clone at one site in NC in one year (1997), but we have not seen any hollow heart. It is resistant to the golden nematode. We will be testing this clone again in 1998.

Salem was recently released from the Cornell University, New York breeding program where it was tested as **NY 84**. Salem is a medium to late season, mostly round, white, slightly netted tablestock potato with white flesh. Over nine trials from 1995-1997 at four sites, its average marketable yield was 103% of Atlantic. In 1997, we chipped it at one trial and it yielded a score of 4, so it might chip directly from the field in NC. Its gravity is only slightly lower than Atlantic. Hollow heart or heat necrosis do not seem to be a problem with this clone in NC. It is resistant to the golden nematode and has very good scab resistance. We will be testing this clone again in 1998.

AF1424-7 is a medium maturing, bright, white-skinned, round selection with shallow eyes. We've tested it in NC over three years at three sites (9 trials) and it has yielded 83% of Atlantic. It chipped well at all sites with scores of 3-4. Its gravity is only slightly lower than that of Atlantic. At one site this clone had some rhizoctonia and a few growth cracks. At the research station in 1996 we noted the presence of pitted scab, but this was not noted in 1997. We plan to evaluate this clone in 1998 at three sites.

AF1433-4 is a medium maturing, white-skinned, round selection. It produces a uniform, medium-sized potato that is nice in appearance with good skin. This clone has been tested in NC over three years at three sites in 11 trials and it has yielded 85% of Atlantic. It chipped well at all sites with scores of 2-4. Its gravity is lower than that of Atlantic. In 1997, it showed weak internal necrosis symptoms. We plan to evaluate this clone in 1998 at three sites.

AF875-15 is a medium maturing, smooth, white-skinned, round selection. In eleven trials in NC over

the last three years its average marketable yield was 107% of Atlantic. Its gravity is slightly less than Atlantic. It does get very slight heat necrosis, but probably not enough to interfere with the quality of chips. Hollow heart is not a problem. Growth cracks have been the major defects in some years in NJ, PA and ME, and we have seen some in NC, too. It is resistant to *Verticillium* and net necrosis. Chip color is about the same as Atlantic. It will be tested at two sites in 1998.

B0178-34 is an medium to late maturity, slightly netted, buff-skinned, round to oblong variety. It produces medium to large-sized potatoes that are nice in appearance with good skin and few defects. Over five trials in 1995-1997, its average marketable yield was 99% of Atlantic. It chipped very well at all sites with chip scores of 3. Its gravity is equal or greater than that of Atlantic. Heat necrosis and hollow heart are not problems. It is resistant to golden nematode, net necrosis and PVX, but susceptible to scab. It has a short dormancy period. We plan to evaluate this clone next year at three sites, and would be interested in having a few growers try it out on a limited basis in 1998-1999.

B0564-8 is a medium maturing, round, white-skinned selection. We've tested it in NC over three years in 10 trials and it has yielded 117% of Atlantic. It produces a nice crop of potatoes with good size distribution for chipping. It chipped well at all sites with scores of 3-4 and its gravity is comparable to that of Atlantic. At one site this clone had some *Rhizoctonia* and a few growth cracks. At the research station in 1996 we noted the presence of deep-pitted scab, but we didn't find scab in this clone at all in 1997. We plan to evaluate this clone next year at four sites.

B0564-9 is a medium maturing, round, white-skinned selection. We've tested it in NC over three years in 8 trials and it has yielded 130% of Atlantic. In three trials in 1996 its average marketable yield was 147% of Atlantic. In two trials in 1997, its average marketable yield was 107% of Atlantic. Its gravity is only slightly lower than that of Atlantic. Its chip scores (generally 4's and 5's) are not as good as those of B0564-8, but B0564-9 produces larger tubers with a nicer appearance, and a nice size distribution. This clone possesses moderate levels of resistance to *Verticillium* wilt, but is susceptible to common scab. Heat necrosis and hollow heart do not appear to be problems in either B0564-8 or B0564-9. We plan to evaluate this clone next year at three sites, and would be interested in having a few growers try it

out on a limited basis in 1998-1999.

NY103 is a medium maturing, round, smooth, bright white-skinned, chipstock and tablestock selection. We've tested it in NC over three years at four sites (5 trials) and it has yielded 91% of Atlantic. It chipped very well at all sites with scores of 2-4. Its gravity is ca. .008 lower than that of Atlantic. Heat necrosis and hollow heart do not appear to be problems. We have seen some soft rot in this clone in our higher organic soil trials, but we are not sure if this will be a serious problem. We plan on evaluating this clone in again 1998 in at least two trials.

Acknowledgements

Without the assistance of the growers, county extension agents and NCDA Tidewater Research Station and Upper Mountain Research Station staff, this work could not be conducted. We are grateful for their continued support and assistance. Wise Foods, Berwick, PA is also gratefully acknowledged for conducting chip tests, and for helping to harvest and grade trials. Frito Lays, Inc. and Hettema Seed Potatoes provided unrestricted gifts which benefited the project. This project is partially funded by The North Carolina Potato Growers Association. Their continued support is much appreciated.

NORTH CAROLINA Table 1a. Potato Variety Trial, Bright Farm, Pasquotank Co. Planted 3-11-97 Harvested 6-25-97 (106 DAP)

CLONE	Total Yield		Marketable Yield ¹		Size Distribution by Class ³			Specific Gravity
	cwt/A		cwt/A	% Std. ²	1's	2's	Culls	
Adora	322		300	132	93	6	0.7	1.070
AF1480-5	260		226	101	87	13	0.8	1.085
AF1565-12	267		235	103	88	10	1.7	1.072
Andover	213		175	77	82	16	1.6	1.077
Atlantic	262		233	100	89	11	0.8	1.094
B0564-8	248		225	101	91	8	1.5	1.087
B0564-9	287		271	121	95	5	0.4	1.086
B0811-13	261		228	100	87	11	1.6	1.082
Carlita	246		223	97	91	7	2.5	1.072
Cherry Red	275		230	100	83	15	1.3	1.087
FL1831	195		162	70	82	16	1.4	1.098
FL1867	218		194	85	89	10	1.9	1.097
FL1889	212		189	82	89	10	1.1	1.089
FL1900	214		197	85	92	7	1.2	1.098
FL1923	183		149	64	82	15	3.3	1.101
ND2224-5R	179		124	56	69	30	0.7	1.068
NY103	183		162	71	88	10	1.4	1.078
Salem (NY84)	233		215	96	93	6	1.1	1.074
Reba (NY87)	192		154	68	80	20	0.3	1.078
Pike	226		180	81	80	20	0.4	1.090
Quaggy Joe	267		227	99	85	14	1.0	1.080
Red Gold	293		240	106	81	18	0.7	1.077
Snowden	233		172	75	74	26	0.6	1.096
Superior	235		209	91	88	10	1.6	1.081

¹. Total 1's.². Standard = Atlantic.³. Size classes: 1's = $\geq 1\frac{7}{8}$ "; 2's = $\frac{7}{8}$ " to $1\frac{7}{8}$ "; culls = all defective potatoes.

NORTH CAROLINA Table 1b. Potato Variety Trial, Bright Farm, Pasquotank Co. Planted 3-11-97 Harvested 6-25-97 106 (DAP)

CLONE	Plant Data ¹			Tuber Data ¹				Tuber Defects ²			Chip Color ³	Comments
	Type	Dis. Rx. ^a	Poll. Rx. ^b	Mat.	Color	Shape	App. Size	Internal Necrosis	Hollow Heart	Chip		
Adora	7	9	6	5	7	5	9	VL	0	0	-	yellow flesh, nice skin but post-harvest bruising
AF1480-5	9	9	6	7	9	3	7	M	0	0	4	nice skin, uniform, some flats
AF1565-12	6	9	7	3	8	3	7	M-L	0	0	3	nice skin, some flats
Andover	7	8	5	4	7	3	9	M	0	0	4	very nice skin, uniform
Atlantic	9	8	9	6	7	2	5	M	0	0	4	lots of skins, growth cracks
B0564-8	8	9	9	5	9	1	9	M-L	0	0	3	nice skin, uniform
B0564-9	9	9	7	6	7	1	9	M-L	0	0	3	lrg than and skins more than B0564-8, uniform
B0811-13	9	9	9	5	2	1	7	S-M	0	0	-	dark red, heavy netting, yellow flesh
Carlita	7	9	8	6	8	3	9	VL	4	0	-	nice skin, yellow flesh
Cherry Red	9	9	9	6	2	3	9	M	0	0	-	nice dark red skin, raised lenticels, uniform
FL1831	8	8	5	6	9	3	7	S-M	0	0	4	some skins, some flats, nice skin
FL1867	9	9	9	5	7	2	5	S-M	0	0	3	growth cracks, lots of skins
FL1889	8	9	9	7	7	3	7	M-L	0	0	4	nice skin, some flats, blocky
FL1900	9	9	9	8	7	3	7	M	0	0	3	some flats & skins, blocky
FL1923	8	9	9	9	7	3	5	S-M	0	0	4	growth cracks, lots of skins
ND2224-5R	6	9	2	1	2	5	6	M	0	0	-	bright red, lots rhizoctonia
NY103	8	9	6	7	9	3	9	S-M	0	0	3	prom lents, vasc ring, skins, lots post hvst bruising
Salem (NY84)	8	9	9	7	7	3	7	M-L	0	0	4	nice skin, some flats
Reba (NY87)	8	9	9	5	9	1	7	S-M	0	0	3	some skins, similar to Pike but larger
Pike	9	9	9	7	7	1	9	S-M	0	0	3	very uniform
Quaggy Joe	9	9	6	6	9	4	7	M-L	0	2	-	nice size mix, some flats, some skins
Red Gold	2/9	9	6	4	2	1	7	M	0	0	-	red/orange skin, yellow flesh
Snowden	9	9	7	8	7	1	7	M	0	0	4	uniform, small
Superior	8	9	9	3	7	1	7	M	0	0	4	prominent lenticels

¹ See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.

² Number per 40 tubers - 10 tubers per replicate.

³ Chip color supplied by Wise Foods. 1 = paper white; 4 = acceptable; 5 = barely acceptable; 6 = unacceptable; 9 = black chip.

NORTH CAROLINA Table 2a. Potato Variety Trial, Cooper Farm, Tyrrell Co. (109 DAP)

CLONE	Total Yield		Marketable Yield ¹		Size Distribution by Class ³			Specific Gravity
	cwt/A	% Std. ²	cwt/A	1's	2's	Culls		
AF1424-7	288		271	73	94	3.9	2.1	1.074
AF1433-4	318		300	81	94	3.2	2.5	1.064
AF1565-12	200		137	37	69	8.3	22.9	1.057
AF1569-2	370		335	90	90	5.1	5.3	1.063
AF1668-60	229		215	58	94	3.7	2.1	1.068
AF875-15	380		334	91	88	7.8	4.5	1.075
Andover	212		187	51	89	8.7	2.7	1.070
Atlantic	388		371	100	96	3.2	1.2	1.082
B0178-34	402		384	104	95	3.4	1.3	1.082
B0564-8	363		333	90	92	7.5	1.1	1.074
B0564-9	365		346	93	95	3.5	2.0	1.077
B0766-3	371		340	92	92	3.5	4.8	1.076
B0811-13	234		205	56	88	11.2	1.2	1.066
ND2224-5R	217		154	42	70	27.6	2.2	1.061
Norvalley (ND2417-6)	346		312	84	90	7.4	2.6	1.075
ND2471-8	348		319	86	91	6.8	1.7	1.073
NorDonna	337		312	84	93	5.9	1.5	1.060
NY103	357		337	91	94	2.5	3.3	1.067
Salem (NY84)	428		404	109	94	3.6	2.1	1.062
Reba (NY87)	359		344	94	96	3.7	0.7	1.067
Pike	352		333	90	94	5.1	0.6	1.083
Snowden	397		377	102	95	4.3	0.9	1.076
Superior	311		297	81	95	2.5	2.2	1.070
Yukon Gold	237		206	56	87	8.1	4.9	1.070

¹ Total 1's.² Standard = Atlantic.³ Size classes: 1's = $\geq 1 \frac{7}{8}$ "; 2's = $\frac{7}{8}$ " to $1 \frac{7}{8}$ "; culls = all defective potatoes.

CLONE	Plant Data ¹			Tuber Data ¹				Tuber Defects ²			Chip Color ³	Comments	
	Type	Dis. Rx. ^a		Poll. Rx. ^b	Mat.	Color	Shape	App.	Size	Necrosis			Hollow Heart
AF1424-7	8	9	9	9	5	7	3	7	M-L	0	0	4	flats, growth cracks, lots of skins, sprouts, greens
AF1433-4	8	9	9	9	5	5	5	5	M-L	1	0	3	skins, soft rot, scab
AF1565-12	7	8	9	9	3	7	7	7	S-M	3	1	-	sprouts, secondary tubers
AF1569-2	8	9	9	9	5	7	6	5	M-L	1	0	-	some flats
AF1668-60	7	9	9	9	4	7	4	5	M-L	0	0	3	sticky stolons, lots of skins, flats
AF875-15	9	9	9	9	6	7	7	5	M-L	0	1	3	lots of greens, sprouts, some scab, flats
Andover	8	9	9	9	3	7	7	7	M	0	0	2	nice skin, poor yield
Atlantic	9	9	9	9	7	7	7	7	M-L	17	1	5	nice size distribution
B0178-34	9	9	9	9	8	7	6	5	M-L	0	0	3	some flats, skins
B0564-8	8	9	9	9	6	7	7	9	M-L	1	0	3	some soft rot, nice skin, flesh whiter than -9
B0564-9	8	8	9	9	6	7	5	7	M-L	1	0	5	skins, larger than -8, some greens, sprouts
B0766-3	8	9	9	9	8	7	4	5	M-L	0	0	3	sprouts, skins, lots of skins, lots of flats
B0811-13	8	8	9	9	4	2	3	5	M	0	0	-	lots of skins, heavy netting, yellow flesh
ND2224-5R	8	8	9	9	1	2	7	7	M	2	0	-	sticky stolons, good skin set, prominent brow
Norvalley (ND2417-6)	9	9	7	6	8	8	4	7	M-L	1	0	3	some points, flats, growth cracks, sprouts
ND2471-8	8	9	9	9	5	9	7	5	M	1	0	3	susceptible to scab & soft rot
NorDonna	9	8	7	5	5	2	7	7	M-L	0	0	-	sprouts, sticky stolons
NY103	9	9	9	9	7	7	5	5	M-L	0	0	3	some skins, soft rot, scab, flats
Salem (NY84)	8	9	9	9	7	8	3	7	L	0	0	-	lots of flats, some growth cracks, heat sprouts
Reba (NY87)	8	9	7	5	7	7	7	7	M-L	2	0	3	flats, greens
Pike	8	9	9	9	8	7	7	7	M	5	0	3	some flats, skins
Snowden	9	9	5	8	8	7	7	5	M	0	1	3	some skins
Superior	8	9	9	9	3	7	6	7	M-L	0	0	4	some skins, blocky, flats
Yukon Gold	8	9	6	5	5	7	4	5	M-L	8	1	-	lots of BH, lots of skins, sprouts

¹ See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.

² Number per 40 tubers - 10 tubers per replicate.

³ Chip color supplied by Wise Foods. 1 = paper white; 4 = acceptable; 5 = barely acceptable; 6 = unacceptable; 9 = black chip.

NORTH CAROLINA Table 3a. Potato Variety Trial, McCotter's Farm, Pamlico Co. (110 DAP)

CLONE	Total Yield		Marketable Yield ¹		Size Distribution by Class ³ (% of total yield)			Specific Gravity
	cwt/A	%	cwt/A	%	1's	2's	Culls	
Adora	241		226	88	93.5	6.6	0.0	1.074
AF1424-7	245		214	84	87.3	8.6	4.2	1.089
AF1433-4	225		202	80	89.1	10.3	0.7	1.078
AF1480-5	315		278	109	87.8	10.1	2.1	1.082
AF1565-12	249		218	85	87.4	9.5	3.1	1.071
Andover	173		151	60	87.4	11.7	0.8	1.085
Atlantic	280		255	100	91.0	6.1	3.0	1.095
B0564-8	286		243	96	85.1	12.9	2.1	1.086
B0766-3	259		224	89	86.5	12.0	1.5	1.094
B0811-13	255		218	86	84.3	15.0	0.8	1.080
B1004-8	214		171	67	80.1	19.4	0.6	1.083
Carlita	258		245	96	94.8	4.7	0.6	1.070
Cherry Red	307		265	105	85.8	11.2	3.0	1.087
ND2224-5R	178		127	50	71.3	24.3	4.4	1.072
Norvalley (ND2417-6)	275		232	91	82.2	16.6	1.3	1.087
ND2471-8	269		229	91	84.4	11.2	4.5	1.088
NY103	281		260	102	92.2	6.2	1.6	1.082
Reba (NY87)	227		196	77	86.2	12.8	1.0	1.082
Pike	239		218	86	90.8	9.0	0.2	1.092
Quaggy Joe	375		316	125	83.9	11.6	4.5	1.077
Red Gold	297		238	94	79.8	17.7	2.6	1.085
Snowden	303		261	103	85.8	11.6	2.6	1.086
Superior	273		252	99	92.1	6.4	1.6	1.078
YukonGold	170		138	54	81.3	10.3	8.5	1.083

¹. Total 1's.². Standard=Atlantic³. Size classes: 1's = $\geq 1 \frac{7}{8}$ "; 2's = $\frac{7}{8}$ " to $1 \frac{7}{8}$ "; culls = all defective potatoes.

NORTH CAROLINA Table 3b. Potato Variety Trial, McCotter's Farm, Pamlico Co.										Planted 3-6-97		Harvested 6-24-97		(110 DAP)	
CLONE	Plant Data ¹				Tuber Data ¹				Tuber Defects ²				Chip Color ³	Comments	
	Type	Rx. ^a	Dis.	Poll.	Rx. ^b	Mat.	Color	Shape	App.	Size	Internal				Hollow Heart
											Necrosis	Heart			
Adora	5	8	9	9	6	7	3	7	L	0	0	1	-	some scab, smooth skin, yellow flesh, large	
AF1424-7	6	9	8	6	6	8	3	5	M-L	0	0	0	4	mixed large & medium, lots of skins, misshapes	
AF1433-4	3	8	9	5	5	7	1	7	M	0	0	0	2	very round, nice skin, some scab	
AF1480-5	8	9	5	6	6	7	3	5	M-L	0	0	0	-	mixed large & medium, some flats, some VN	
AF1565-12	2	8	7	4	7	7	3	6	S-M	1	0	0	-	mixed small & medium, some flats, good skin	
Andover	6	8	9	3	7	7	2	9	S	0	0	0	3	small, nice skin	
Atlantic	7	8	9	7	7	7	1	5	M	2	0	0	3	skins, mixed sizes, soft rot	
B0564-8	9	8	9	6	7	7	1	9	M-L	0	0	0	4	nice skin, mixed medium & large	
B0766-3	7	8	6	7	7	8	1	5	S-M	0	0	0	2	some flats, some skins, lots of bruising	
B0811-13	8	9	9	5	5	2	1	3	M	0	0	0	-	heavy netting, deep apical eyes, lots of skins	
B1004-8	5	9	9	6	6	4	5	7	S	0	0	0	-	good skin set, small, medium to heavy russet	
Carlita	5	9	9	5	5	8	3	9	L	0	0	0	6	yellow flesh, nice smooth skin, large, blocky	
Cherry Red	9	9	6	5	5	2	3	5	M	0	0	0	-	good skin set, heavy net, some rhizoctonia	
ND2224-5R	3	8	7	2	2	2	3	5	M	0	0	0	-	some scab and soft rot, lots of rhizoctonia	
Norvalley (ND2417-6)	7	7	8	5	9	9	3	7	S-M	0	0	0	4	mixed small & medium, smaller than ND2471-8	
ND2471-8	6	9	6	5	5	8	1	7	M-L	0	0	0	5	nice size, susceptible to scab	
NY103	6	9	6	7	8	8	3	5	M-L	0	0	0	2	some scab, lots of skins	
Reba (NY87)	2	9	9	5	5	9	3	5	S-M	0	0	0	3	some flats	
Pike	3	9	9	8	9	9	3	9	S-M	0	0	0	3	larger than NY87, some skins	
Quaggy Joe	1/7	9	9	5	5	9	3	9	M-L	4	0	0	-	nice skin, blocky, eyes with light blush, weak IN	
Red Gold	4	9	6	5	5	3	3	7	S-M	0	0	0	-	orange/pink, good skin set, dk rd eyes, lots VN	
Snowden	9	8	5	8	7	7	1	9	M-L	0	0	0	2	nice skin	
Superior	5	8	9	3	3	7	1	7	M	0	0	0	5	good skin	
YukonGold	8	9	9	3	3	7	3	9	M	1	0	0	-	smooth skin, lots rhizoctonia, scab	

¹. See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.

² Number per 40 tubers - 10 tubers per replicate.

³. Chip color supplied by Wise Foods. 1 = paper white; 4 = acceptable; 5 = barely acceptable; 6 = unacceptable; 9 = black chip.

¹ See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.

² Number per 40 tubers - 10 tubers per replicate.

³ Chip color supplied by Wise Foods. 1 = paper white; 4 = acceptable; 5 = barely acceptable; 6 = unacceptable; 9 = black chip.

CLONE	Total Yield		Marketable Yield ¹		Size Distribution by Class ³				Specific Gravity
	cwt/A		cwt/A	% Std. ²	1's	2's	3's	Culls	
AF1424-7	173		159	77	75	17	2.9	5.8	1.087
AF1433-4	172		161	73	71	23	5.0	1.0	1.073
AF1437-1	260		238	109	61	30	6.9	1.7	1.067
AF1480-5	222		197	91	63	26	4.3	6.7	1.079
AF1565-12	182		167	76	71	21	3.4	5.0	1.069
AF1615-1	208		193	91	56	37	6.1	1.0	1.073
AF1668-60	162		153	73	78	16	3.0	2.7	1.076
AF1726-9	249		229	107	69	23	3.8	4.3	1.076
AF1763-2	222		209	100	73	21	3.6	2.3	1.062
AF1774-2	199		184	84	61	31	5.5	2.3	1.073
AF875-15	232		216	102	71	22	4.1	3.0	1.087
Andover	147		139	64	69	26	3.7	1.4	1.084
Atlantic	238		219	100	77	15	3.3	4.9	1.087
B0564-8	205		191	90	69	24	5.1	1.8	1.082
B0766-3	178		168	77	69	25	4.9	1.3	1.085
B0856-4	271		246	118	71	20	3.4	5.6	1.076
B1065-51	182		174	82	88	7	1.8	2.6	1.078
B1065-64	167		153	72	63	29	5.0	3.4	1.078
B1240-12	113		104	48	77	15	4.3	3.2	1.075
B1240-14	192		178	84	83	10	2.1	5.1	1.082

¹ Total 1's and 2's.² Standard = Atlantic.³ Size classes: 1's = $\geq 1\ 7/8"$; 2's = $1\ 1/2"$ to $1\ 7/8"$; 3's = $\leq 1\ 1/2"$; culls = all defective potatoes.

NORTH CAROLINA Table 4a (Cont'd.). NE184 Variety Trial, TRS/VGJREC, Washington Co. Planted 3-17,18-97 Harvested 7-1,2-97 (106 DAP)

CLONE	Total Yield cwt/A	Marketable Yield ¹		Size Distribution by Class ³ (% of total yield)				Specific Gravity
		cwt/A	% Std. ²	1's	2's	3's	Culls	
B1342-21	151	144	68	79	16	4.1	0.8	1.085
B1406-10	170	158	74	65	28	5.4	1.7	1.082
B1429A-3	198	187	88	68	27	4.8	0.6	1.082
Itasca (MN12567)	242	232	109	76	20	2.8	1.3	1.077
Katahdin	209	200	95	75	20	3.0	2.0	1.080
Kennebec	290	276	127	83	12	2.0	2.7	1.083
ND2417-6	201	189	85	64	30	4.9	1.3	1.082
ND2471-8	220	205	95	66	26	4.4	2.8	1.087
Niska	234	217	102	61	32	5.2	1.7	1.085
NorValley	171	156	72	52	39	6.9	2.1	1.083
NY102	222	214	101	72	25	3.7	0.2	1.088
NY103 (ME)	248	233	110	77	17	2.5	3.4	1.079
NY103 (NY)	149	132	62	64	25	5.9	5.5	1.080
NY84(Salem)	253	237	111	81	13	3.2	2.9	1.070
NY87	191	172	82	66	24	5.5	5.0	1.076
Pike	169	159	74	74	20	3.4	2.7	1.089
Quaggy Joe	212	196	92	73	20	3.5	4.1	1.071
Snowden	201	188	87	68	26	3.4	3.1	1.082
Superior	236	226	105	85	11	1.4	2.8	1.077
Yukon Gold	195	172	81	74	14	4.6	6.9	1.083

¹ Total 1's and 2's
² Standard = Atlantic.
³ Size classes: 1's = $\geq 1\ 7/8"$; 2's = $1\ 1/2"$ to $1\ 7/8"$; 3's = $\leq 1\ 1/2"$; culls = all defective potatoes.

CLONE	Plant Data ¹			Tuber Data ¹			Tuber Defects ²			Chip Color ³	Comments	
	Type	Dis.	Poll.	Color	Shape	App. Size	Internal	Hollow				
		Rx. ^a	Rx. ^b				Necrosis	Heart				
AF1424-7	2	9	9	6	9	2	5	M	0	0	3	some vascular ring, skins, soft rot, scab, rhizoctonia
AF1433-4	5	8	9	4	7	2	5	M	2	0	3	soft rot, rhizoctonia
AF1437-1	7	9	9	5	7	2	9	S-M	2	0	-	uniform, nice skin set, blocky
AF1480-5	6	9	8	6	7	3	5	M	7	0	-	lots of soft rot
AF1565-12	3	6	9	3	8	5	3	M-L	0	0	-	lots of rhizoctonia, soft rot
AF1615-1	6	9	9	4	8	5	7	S-M	1	0	-	nice bright skin
AF1668-60	2	7	9	5	7	2	7	S-M	0	0	3	lots of vascular ring, skins
AF1726-9	6	8	9	4	7	3	7	S-M	0	0	3	soft rot, growth cracks, nice skin set
AF1763-2	4	9	9	5	7	3	7	M-L	0	0	-	some flats, uniform
AF1774-2	3	8	9	5	9	3	5	S-M	1	0	-	most culls were misshapes
AF875-15	7	8	9	4	7	2	7	M	0	0	4	some vasc ring, rhizoct., deep apical eyes, short dorm
Andover	4	7	8	3	7	3	7	S-M	1	0	3	some rhizoctonia, blocky
Atlantic	8	8	8	6	7	2	5	M-L	11	0	3	soft rot
B0564-8	7	9	9	6	7	2	9	M	0	0	3	rhizoctonia, netting comparable to Atlantic
B0766-3	4	9	9	7	7	3	7	M	3	0	3	skins
B0856-4	7	8	7	5	9	2	5	M-L	1	0	-	scab, lots of soft rot, deep apical eyes, short dorm
B1065-51	6	8	9	5	7	3	9	M-L	3	0	-	uniform, heavy net
B1065-64	2	7	9	4	7	3	7	S-M	5	0	3	medium, buff netted
B1240-12	3	8	9	4	8	2	5	M-L	6	0	4	some flats, soft rot, blocky
B1240-14	3	8	9	5	8	2	7	M-L	1	1	-	lots of pitted scab, lots of rhizoctonia, lots of soft rot

¹ See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.

² Number per 40 tubers - 10 tubers per replicate.

³ Chip color supplied by Wise Foods. 1 = paper white; 4 = acceptable; 5 = barely acceptable; 6 = unacceptable; 9 = black chip.

CLONE	Plant Data ¹			Tuber Data ¹			Tuber Defects ²			Chip	Comments
	Type	Dis. Rx. ^a	Poll. Rx. ^b	Mat.	Color	Shape	App. Size	Internal Necrosis	Hollow Heart		
B1342-21	5	9	9	5	7	3	7 M	5	0	-	lots of vascular ring, scab
B1406-10	9	8	9	6	7	2	5 S-M	2	0	-	lots of vascular ring, lots of skins
B1429A-3	3	7	9	5	7	2	7 S-M	3	0	2	some vascular ring, scab, nice skin
Itasca (MN12567)	8	6	9	8	8	3	7 M	0	0	7	some vascular ring, uniform, too flat?
Katahdin	6	8	9	5	8	3	5 M	2	0	-	scab
Kennebec	8	9	9	8	9	5	5 L	2	0	-	scab
ND2417-6	6	9	9	6	7	2	5 M	1	0	3	lots of vascular ring, some flats
ND2471-8	7	9	9	7	7	2	5 S-M	1	1	3	lots of vascular ring, scab & soft rot; 1 w/black center
Niska	4	9	8	7	8	2	5 S-M	0	0	4	blocky, prominent brows, medium
Norvalley	6	7	9	6	7	2	7 S-M	0	0	2	some vascular ring,
NY102	8	8	8	6	9	3	7 S-M	1	0	4	lots vasc ring, scab, blocky, flats, sm - med, prom lent
NY103 (ME)	7	9	9	6	7	3	7 M-L	1	0	2	lots of vascular ring, soft rot
NY103 (NY)	4	8	8	5	7	3	7 M	1	0	4	lots of soft rot, scab, some flats
NY84(Salem)	3	8	9	6	8	5	9 M-L	1	0	-	nice skin, some flats, most culls were misshapes, large
NY87	3	8	9	5	9	2	5 M	0	0	3	scab, rhizoctonia, soft rot, blocky
Pike	4	9	9	8	8	3	9 S-M	2	0	4	rhizoctonia
Quaggy Joe	8	8	9	5	9	3	5 M-L	1	0	-	scab, rhizoctonia
Snowden	7	9	6	7	7	2	5 M	0	0	2	rhizoctonia, lots of skins, deep apical eyes
Superior	4	8	9	4	8	2	5 M	0	0	6	some soft rot
Yukon Gold	9	9	7	4	7	3	5 M	2	0	-	scab, soft rot, rhizoctonia

¹ See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.² Number per 40 tubers - 10 tubers per replicate.³ Chip color supplied by Wise Foods. 1 = paper white; 4 = acceptable; 5 = barely acceptable; 6 = unacceptable; 9 = black chip.

NORTH CAROLINA Table 5a. Potato Variety Trial, UMRS, Laurel Springs, Ashe Co. Planted 5-5-97 Harvested 8-26-97 (113 DAP)

CLONE	Total Yield		Marketable Yield ¹		Size Distribution by Class ³		Specific Gravity
	cwt/A		cwt/A	% Std. ²	1's	2's	
90245.1	117		99	48	83.8	9.8	1.079
90295.1	149		116	58	75.7	10.2	1.087
AF1424-7	138		119	60	86.4	4.8	1.081
AF1433-4	195		162	80	82.6	7.3	1.078
AF1565-12	81		68	33	81.2	3.9	1.077
AF875-15	138		105	51	75.3	4.7	1.090
Atlantic	239		203	100	85.0	4.7	1.090
B9922-11	192		164	81	84.6	4.2	1.088
Batavia	232		169	88	72.3	11.2	1.075
BelRus	125		94	47	75.1	14.2	1.087
Chieftain	219		193	98	88.5	5.9	1.075
Dk Rd Norland	157		120	60	75.9	9.3	1.071
Katahdin	205		133	67	64.2	7.8	-
Kennebec	264		200	99	75.6	6.2	1.082
MSB073-2	214		180	88	82.5	9.3	1.094
MSC120-1Y	170		135	65	78.5	8.0	1.086
MSC148-A	215		175	85	80.5	13.6	1.085
ND2224-5R	168		117	58	68.8	12.5	1.062
Nishiyutaka	206		142	71	68.7	14.9	1.075
NY103 (NY)	161		134	70	82.9	7.4	1.082
NY84 (Salem)	228		188	97	81.9	6.8	1.078
NY87 (Reba)	173		134	67	78.2	9.2	1.084
Snowden	251		207	104	81.7	9.0	1.095
Superior	213		193	98	90.5	3.6	1.073
YukonGold	134		81	39	58.6	4.8	1.081

¹. Total 1's.². Standard = Atlantic.³. Size classes: 1's = $\geq 1 \frac{7}{8}$ "; 2's = $\frac{7}{8}$ " to $1 \frac{7}{8}$ "; culls = all defective potatoes.

CLONE	Plant Data ¹			Tuber Data ¹				Tuber Defects ²				
	Type	Dis. Rx. ^a	Poll. Rx. ^b	Mat.	Color	Shape	App.	Size	Internal		Heart	Comments
									Necrosis	Hollow		
90245.1	9	8	9	-	7	5	5	M-L	0	0	0	points, netting, skins, mixed large & small
90295.1	9	8	9	-	7	3	3	M	2	0	0	flats, secondary tubers, skins, greens, misshapes
AF1424-7	2	6	6	-	7	2	5	M	0	0	0	secondary tubers, skins, flats, netting, blocky
AF1433-4	3	6	5	-	7	2	8	L	0	0	0	netting, blocky, misshapes, wireworm
AF1565-12	2	7	8	-	7	3	5	L	2	0	0	points, flats, mixed large & small, alligator skin, nice
AF875-15	3	7	7	-	7	3	3	L	0	0	0	secondary sprouting, secondary tubers, flats, skins
Atlantic	4	8	8	-	7	2	8	L	0	0	0	skins, flats, lots of smalls, blocky
B9922-11	4	5	5	-	5	5	8	M	0	0	0	blocky, misshapes, nice russet, flats, skins
Batavia	7	8	8	-	8	2	5	M	0	0	0	nice skin, secondary sprouting, secondary tubers
BelRus	3	6	6	-	5	5	5	M	0	0	0	skins, lots of misshapes
Chieftain	3	6	7	-	2	3	3	M-S	0	0	0	secondary sprouting, flats, skins, pink skin
Dk Rd Norland	2	6	8	-	2	2	5	M	0	0	0	nice skin, points, flat, mixed large & small
Katahdin	6	8	7	-	8	2	8	M	0	0	0	greens, flats, skins, lots of wireworm, misshapes
Kennebec	8	8	8	-	8	5	5	L	1	0	0	most culls misshapes or greens, skins, flats
MSB073-2	5	8	9	-	7	2	8	M-S	0	0	0	skins, mixed sizes, uniform
MSC120-1Y	3	7	8	-	7	3	8	M-L	0	0	0	misshapes, smalls, wireworm, yellow flesh, pink blush
MSC148-A	4	7	8	-	7	2	7	M-L	0	0	0	flats, skins, lots of smalls, some scab
ND2224-5R	2	5	7	-	2	3	8	M-L	0	0	0	dark red, smalls, wireworm, some Rhizoctonia
Nishiyutaka	7	7	6	-	7	3	5	L	0	0	0	nice skin, skins, flats, secondary tubers
NY103 (NY)	3	8	8	-	8	2	8	M-L	2	0	0	very round, nice, some Rhizoctonia
NY84 (Salem)	6	7	9	-	8	3	5	L	5	0	0	skins, flats, blocky, mixed sizes
NY87 (Reba)	7	8	8	-	8	2	5	M	5	0	0	flats, blocky, med.-deep eyes
Snowden	8	8	7	-	8	2	3	M-S	0	0	0	misshapes, growth cracks, skins
Superior	2	7	8	-	8	3	8	M-L	0	0	0	flats, blocky, skins
Yukon Gold	3	7	8	-	8	2	3	L	0	0	0	skins, mixed sizes

¹ See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.² Number per 40 tubers - 10 tubers per replicate.³ Chip color supplied by Wise Foods. 1 = paper white; 4 = acceptable; 5 = barely acceptable; 6 = unacceptable; 9 = black chip.

NORTH CAROLINA Table 6a. Red Potato Variety Trial, TRS/VGJREC, Washington Co. Planted 3-17,18-97 Harvested 7-1,2-97 (106 DAP)

CLONE	Total Yield cwt/A	Marketable Yield ¹		Size Distribution by Class ³ (% of total yield)				Specific Gravity
		cwt/A	% Std. ²	1's	2's	3's	Culls	
B0811-13	209	194	86	66	26	5.7	1.9	1.097
B0811-4	156	139	62	45	44	10.6	0.8	1.092
B0852-7	147	136	60	73	19	2.5	5.1	1.082
B0985-1	102	91	41	54	35	7.4	3.4	1.068
Cherry Red	255	243	108	81	14	2.4	2.3	1.086
Chieftain	274	261	115	84	11	3.0	1.9	1.068
Dk Rd Norland	242	231	102	80	15	2.8	2.1	1.068
ND2224-5R	191	172	77	57	33	8.3	1.7	1.067
ND2225-1R	183	164	73	51	38	8.6	1.7	1.071
NorDonna	262	249	110	83	12	2.7	2.4	1.070
Red Gold	246	224	99	70	21	3.9	5.0	1.084
Red LaSoda	241	229	102	86	9	1.5	3.6	1.065

¹ Total 1's and 2's.² Standard = Superior.³ Size classes: 1's = $\geq 1 \frac{7}{8}$ "; 2's = $1 \frac{1}{2}$ " to $1 \frac{7}{8}$ "; 3's = $\leq 1 \frac{1}{2}$ "; culls = all defective potatoes.

CLONE	Plant Data ¹				Tuber Data ¹				Tuber Defects ²		
	Type	Dis. Rx. ^a		Mat.	Color	Shape	App.	Size	Internal		Comments
		Rx. ^a	Poll. Rx. ^b						Necrosis	Hollow Heart	
B0811-13	5	8	8	4	2	1	7	S-M	0	0	dark red, yellow flesh, heavy netting, rhizoctonia, scab
B0811-4	4	4	7	4	2	1	7	S	0	0	good skin set, fish drkr yellow than B0811-13, small
B0852-7	3	8	8	4	1	3	3	M-L	3	0	purple, white flesh, sticky stolons, scurf
B0985-1	6	7	7	2	2	1	3	M	0	0	dark red, white flesh, soft rot, alligator skin, scurf
Cherry Red	8	9	9	6	2	5	3	S-M	0	0	dark red, soft rot, rhizoctonia, heavy alligator skin
Chieftain	9	8	8	7	3	5	3	M	17	0	lots of skins
Dk Rd Norland	3	7	8	3	3	5	5	M	0	0	growth cracks, skins
ND224-5R	3	8	7	2	2	5	7	M	0	0	dark red
ND225-1R	2	7	9	3	2	5	5	M	0	0	too much netting, good skin set
NorDonna	5	8	8	5	2	1	7	M-L	1	0	heavy alligator skin
Red Gold	4	8	9	4	2	3	7	M	1	0	Lots of vascular ring, scabby, sunscald, yellow flesh
Red LaSoda	3	7	8	4	3	3	5	M	2	0	lots of soft rot, scab, lumpy

¹ See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.

² Number per 40 tubers - 10 tubers per replicate.

NORTH CAROLINA Table 7a. Russet Potato Variety Trial, TRS/VGJREC, Washington Co. Planted 3-17,18-97 Harvested 7-1,2-97 (106 DAP)

CLONE	Total Yield cwt/A	Marketable Yield ¹		Size Distribution by Class ³ (% of total yield)				Specific Gravity
		cwt/A	% Std. ²	1's	2's	3's	Culls	
B1004-8	166.1	153.4	68	58.1	34.1	7.8	0.0	1.0742
B9922-11	217.9	211.4	94	88.6	8.5	1.5	1.4	1.0800
BelRus	195.2	182.1	81	64.3	29.0	3.4	3.3	1.0834
Century Russet	394.9	384.2	170	70.5	26.8	2.3	0.3	1.0812
Coastal Rus	181.8	165.8	73	65.3	26.5	8.2	0.0	1.0693
W1099Rus	239.6	229.8	102	68.1	27.7	3.4	0.7	1.0975

¹Total 1's and 2's.²Standard = Superior.³Size classes: 1's \Rightarrow 1 7/8"; 2's = 1 1/2" to 1 7/8"; 3's \leq 1 1/2"; culls = all defective potatoes.

NORTH CAROLINA Table 7b. Russet Potato Variety Trial, TRS/VGJREC, Washington Co. Planted 3-17,18-97 Harvested 7-1,2-97 (106 DAP)

CLONE	Plant Data ¹				Tuber Data ¹				Tuber Defects ²		
	Dis.		Poll.		Color		TXT.		Internal Hollow		
	Type	Rx. ^a	Rx. ^b	Mat.	Mat.	Shape	App.	Size	Necrosis	Heart	Comments
B1004-8	5	9	9	8	8	5	2	8	5	-	heavy russet
B9922-11	6	8	9	5	5	5	2	8	7	-	heavy russet, uniform, nice, but small
BelRus	5	8	9	6	6	5	2	8	3	-	lots of soft rot, patchy russetting
Century Russet	9	9	9	9	9	5	4	8	5	-	heavy russet, long, best of russets tested
Coastal Rus	3	8	9	5	5	5	4	8	3	-	growth cracks, patchy russetting
W1099Rus	6	8	9	5	5	5	3	8	3	-	small

¹ See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.² Number per 40 tubers - 10 tubers per replicate.

NORTH CAROLINA Table 8a. Unreplicated Potato Trial, TRS/VGJREC, Washington Co.									
Planted 3-17,18-97 Harvested 7-1,2-97 (106 DAP)									
CLONE	Total Yield cwt/A	Marketable Yield ¹		Size Distribution by Class ³ (% of total yield)					Specific Gravity
		cwt/A	% Std. ²	1's	2's			Culls	
					3's				
8800.1	204	191	87	71	22	5.6	0.8	1.062	
90245.1	210	195	89	64	29	7.0	0.0	1.080	
90295.1	172	156	71	56	34	9.5	0.0	1.082	
AF1838-3	177	162	74	58	33	6.5	1.8	1.082	
AF1845-3	296	285	130	79	18	3.3	0.6	1.083	
AF1845-7	216	207	94	71	24	3.0	1.5	1.070	
AF1852-1	319	301	137	86	8	3.1	2.6	1.072	
AF1852-3	150	125	57	31	52	15.3	1.1	1.085	
AF1856-1	240	230	105	88	8	1.4	2.7	1.082	
AF1864-22	167	155	71	51	42	6.9	0.0	1.080	
B0984-1	251	243	111	86	10	1.3	2.0	1.082	
B1072-21	241	231	105	92	4	1.4	2.7	1.074	
B1075-26	188	173	79	73	19	3.5	4.3	1.081	
B1088-37	285	282	129	93	6	0.6	0.6	1.071	
B1091-29	234	214	98	72	20	4.2	4.2	1.081	
B1102-3	139	121	55	56	31	12.9	0.0	1.082	
B1145-2	149	139	64	61	33	5.5	1.1	1.058	
B1206-10	235	214	98	81	10	0.7	8.3	1.073	
B1214-7	239	221	101	87	5	2.1	5.5	1.080	
B1240-1	279	269	123	91	5	1.2	2.3	1.081	

NORTH CAROLINA Table 8a (Cont'd.). Unreplicated Potato Trial, TRS/VG/JREC, Washington Co. Planted 3-17,18-97 Harvested 7-1,2-97 (106 DAP)

CLONE	Total Yield		Marketable Yield ¹		Size Distribution by Class ³				Specific Gravity
	cwt/A		cwt/A	% Std. ²	1's	2's	3's	Culls	
B1307-27	296		287	131	79	18	2.8	0.6	1.083
B1315-31	220		205	94	70	24	6.7	0.0	1.080
B1321-21	286		271	124	82	13	2.3	2.9	1.081
B1321-22	267		246	112	72	20	4.3	3.7	1.078
B1338-27	212		195	89	44	48	7.7	0.0	1.077
B1344-18	241		225	103	68	25	5.4	1.4	1.080
B1375-14	183		170	77	65	28	5.4	1.8	1.082
B1399-4	280		272	124	87	10	1.2	1.7	1.083
B1401-5	208		197	90	65	30	2.4	3.1	1.086
B1408-3	244		234	107	85	11	3.4	0.7	1.089
B1409-2	214		206	94	67	29	3.8	0.0	1.090
B1414-2	212		202	92	87	8	1.5	3.1	1.082
B1415-7	275		271	124	93	6	1.2	0.0	1.076
B1418-2	192		178	81	78	15	3.4	3.4	1.079
B1425-9	271		256	117	75	19	4.2	1.2	1.093
B1429A-6	225		218	100	85	12	2.2	0.7	1.083
B1452-10	202		194	89	75	21	2.4	1.6	1.086
B1452-22	280		262	120	81	13	4.1	2.3	1.070
B1452-9	232		218	99	77	17	4.2	2.1	1.077
B1465-2	160		150	69	61	33	5.1	1.0	1.072

NORTH CAROLINA Table 8a (Cont'd.). Unreplicated Potato Trial, TRS/VGJREC, Washington Co. Planted 3-17,18-97 Harvested 7-1,2-97 (106 DAP)

CLONE	Total Yield cwt/A	Marketable Yield ¹		Size Distribution by Class ³ (% of total yield)			Specific Gravity
		cwt/A	% Std. ²	1's	2's	3's	
B1469-2	75	70	32	70	24	2.2	1.082
B1473-10	99	95	44	83	13	3.3	1.077
B1475-1	220	202	92	73	19	5.2	1.077
B1477-1	225	212	97	77	17	2.9	1.084
B1477-5	216	203	93	76	18	4.5	1.081
B1479-4	158	151	69	69	27	4.1	1.081
B1481-2	165	152	69	80	12	6.0	1.082
B1491-20	141	126	58	59	30	9.3	1.073
B1491-5	173	157	72	49	42	9.4	1.077
B1492-15	181	168	77	77	15	4.5	1.067
B1493-2	232	225	103	90	7	1.4	1.068
B7200-33	239	216	98	58	33	4.8	1.075
Batavia	261	240	110	68	24	5.6	1.059
ND2470-27	322	309	141	81	15	2.5	1.084
ND2676-10	185	175	80	64	31	5.3	1.080
ND3574-5R	210	193	88	58	34	6.2	1.063
ND3647-6	281	246	113	59	29	6.4	1.071
ND3828-15	275	267	122	80	17	2.4	1.075
ND4778-2	148	133	61	60	30	6.6	1.062
Nishiyutaka	203	188	86	67	26	6.4	1.071

NORTH CAROLINA Table 8a (Cont'd.). Unreplicated Potato Trial, TRS/VGJREC, Washington Co. Planted 3-17, 18-97 Harvested 7-1, 2-97 (106 DAP)

CLONE	Total Yield cwt/A	Marketable Yield ¹			Size Distribution by Class ³ (% of total yield)				Specific Gravity
		cwt/A	% Std. ²		1's	2's	3's	Culls	
NYP21-2	303	290	132		86	10	3.2	1.1	1.073
NYP32-3	186	181	83		74	24	2.6	0.0	1.096
NYP63-1	227	206	94		78	13	6.5	2.9	1.089
NYP73-2	196	185	84		50	44	5.0	0.8	1.088
NYQ3-12	218	208	95		79	16	3.0	1.5	1.083
NYQ8-2	260	242	111		77	16	3.1	3.8	1.083
NYR17-11	239	233	106		86	11	2.7	0.0	1.070
NYR17-19	180	163	75		55	36	6.4	2.7	1.079
NYR17-2	255	242	110		82	13	2.6	2.6	1.070
NYR17-20	221	205	94		76	17	3.0	4.4	1.079
NYR17-7	302	286	130		78	16	3.2	2.2	1.076
NYR170-6	259	246	112		59	36	5.1	0.0	1.076
NYR18-4	261	239	109		65	26	6.3	2.5	1.077
NYR18-6	213	201	92		67	28	3.8	1.5	1.073
NYR19-20	246	229	104		64	29	3.2	4.0	1.081
NYR19-7	188	173	79		83	9	2.6	5.2	1.072
NYR41-11	317	304	139		76	20	4.1	0.0	1.074
NYR41-18	236	231	105		77	21	1.4	0.7	1.076

¹ Total 1's and 2's

² Standard = Atlantic.

³ Size classes: 1's = $\geq 1 \frac{7}{8}$ "; 2's = $1 \frac{1}{2}$ " to $1 \frac{7}{8}$ "; 3 = $\leq 1 \frac{1}{2}$ "; culls = all defective potatoes.

CLONE	Plant Data ¹				Tuber Data ¹				Tuber Defects ²			Chip Color ³	Comments
	Type	Dis. Rx. ^a		Mat.	Color	Shape	App. Size	Internal Necrosis	Hollow Heart		Chip		
		Rx. ^a	Poll.						Necrosis	Heart			
8800.1	3	4	9	5	8	4	5	M-L	0	0	-	-	short dormancy
90245.1	9	8	9	6	5	5	5	M	0	0	-	-	
90295.1	5	7	9	7	7	5	9	S	1	0	-	-	light red?
AF1838-3	5	4	3	4	7	5	3	M	1	1	-	-	
AF1845-3	9	9	9	8	8	3	7	M	0	0	4	4	blocky, uniform, bright white, too many smalls?
AF1845-7	3	8	8	3	8	5	5	M	0	0	-	-	
AF1852-1	6	9	8	5	8	3	9	M-L	3	1	2	2	uniform, very nice
AF1852-3	3	8	9	3	7	1	5	S	0	0	-	-	yield off
AF1856-1	2	9	7	6	8	3	9	M-L	n	0	2	2	blocky, nice size distribution
AF1864-22	9	8	9	4	7	1	9	S	1	0	-	-	
B0984-1	3	8	9	4	2	1	9	M	0	0	-	-	white flesh
B1072-21	2	8	9	5	8	2	9	M-L	0	0	4	4	very uniform, eyes with pink blush
B1075-26	2	6	6	4	8	3	7	M	1	0	-	-	lenticels obvious
B1088-37	3	8	9	4	7	3	5	L	0	0	5	5	uniform, nice skin, large
B1091-29	3	7	9	5	7	1	9	M	0	0	-	-	some scab, blotchy netting (russet background?)
B1102-3	2	8	8	3	2	1	5	S-M	0	0	-	-	medium-small, prominent eyebrows, white flesh
B1145-2	2	7	9	1	2	1	5	M	0	0	-	-	some silver scurf
B1206-10	5	7	9	5	7	5	9	M	2	1	-	-	growth cracks, misshapes
B1214-7	2	9	9	5	7	1	2	L	0	0	5	5	good size, shape
B1240-1	2	8	9	9	7	3	5	M-L	1	0	3	3	nice size dist., skins, oblong

NORTH CAROLINA Table 8b (Cont'd.). Unreplicated Potato Trial, TRS/VGJREC, Washington Co. Planted 3-17,18-97 Harvested 7-1,2-97 (106 DAP)

CLONE	Plant Data ¹				Tuber Data ¹			Tuber Defects ²				
	Type	Dis. Poll.		Mat.	Color	Shape	App. Size	Internal Necrosis	Hollow Heart		Chip Color ³	Comments
		Rx. ^a	Rx. ^b						Heart	Heart		
B1307-27	5	8	9	8	7	5	2 M	6	0	0	-	
B1315-31	5	4	5	5	9	1	5 S-M	0	0	0	-	some scab
B1321-21	6	9	9	7	7	1	7 M	0	0	0	4	nice size distribution, medium
B1321-22	3	9	9	5	7	1	5 M-L	1	0	0	3	lots of smalls
B1338-27	5	7	9	2	7	3	5 S	0	0	0	-	
B1344-18	6	9	9	4	7	3	7 M-L	0	0	0	4	flats, blocky, lots of smalls
B1375-14	2	6	9	3	7	2	3 S-M	0	0	0	-	lots of soft rot
B1399-4	2	8	9	5	7	3	7 M	0	0	0	5	blocky, nice appearance
B1401-5	8	7	9	6	3	8	9 M	0	0	0	-	lots of misshapes, blocky
B1408-3	5	9	9	8	7	1	5 M-L	2	0	0	4	nice size mix, heavy net, buff
B1409-2	2	8	9	7	5	5	7 S-M	0	2	0	-	russet, cracks, lots of smalls
B1414-2	2	9	9	6	9	2	7 M	0	0	0	3	lots of soft rot, nice size distribution
B1415-7	5	8	9	7	7	1	9 M-L	0	0	0	3	nice size dist.
B1418-2	8	9	7	6	7	1	3 M	0	0	0	-	soft rot, lots of skins, rhizoctonia
B1425-9	5	8	9	5	7	1	7 M	2	0	0	4	deep eyes
B1429A-6	2	8	8	4	8	1	7 M	0	0	0	3	uniform
B1452-10	5	5	8	6	5	5	7 S	1	1	1	-	
B1452-22	3	8	8	5	7	1	5 M-L	0	0	0	-	some smalls flats
B1452-9	2	8	9	5	7	1	5 M-L	0	0	0	-	flatish, nice skin
B1465-2	2	6	8	4	7	1	9 S-M	0	0	0	-	

CLONE	Plant Data ¹				Tuber Data ¹			Tuber Defects ²			Chip Color ³	Comments	
	Type	Dis. Poll.		Mat.	Color	Shape	App. Size	Internal		Hollow Heart			
		Rx. ^a	Rx. ^b					Necrosis	Heart				
B1469-2	4	7	9	5	8	8	3	M	4	0	0	-	no yield, blotchy russetting
B1473-10	7	8	9	7	7	1	5	M	0	0	0	-	flats
B1475-1	5	9	9	9	7	3	5	M	4	0	0	6	
B1477-1	2	8	9	5	7	2	7	M	0	0	0	4	nice size distribution, short dormancy
B1477-5	5	8	9	5	8	1	7	M	1	0	0	-	flatfish, scab
B1479-4	1	8	9	5	8	4	5	M	0	0	0	-	flats
B1481-2	2	8	9	7	7	1	3	S-M	2	0	0	-	poor skin
B1491-20	5	8	9	2	2	1	5	M	0	0	0	-	low yield
B1491-5	6	8	4	2	2	1	7	S-M	1	0	0	-	sticky stolons, good skin set, white flesh
B1492-15	2	7	8	2	4	1	7	M-L	0	0	0	-	cream colored flesh, dark red skin
B1493-2	5	8	9	6	2	1	5	M-L	0	0	0	-	skins, netting too heavy?, white flesh,
B7200-33	2	9	7	5	8	6	7	M	0	0	0	-	nice skin, longish, won't fit our needs
Batavia	6	8	8	5	7	1	5	M	0	0	0	-	white flesh
ND2470-27	3	9	9	6	8	1	5	M	2	0	0	-	points, irregulars
ND2676-10	3	8	9	5	9	1	7	S-M	0	0	0	-	low yield
ND3574-5R	2	5	9	2	2	3	5	M	0	0	0	-	prominent eye brows, smooth skin
ND3647-6	6	8	9	7	8	1	5	M	4	0	0	-	lots of skins, growth cracks, flat
ND3828-15	3	9	7	4	8	1	5	M	0	0	0	-	nice skin
ND4778-2	3	4	9	1	9	1	5	M	0	0	0	-	soft rot, low yield
Nishiyutaka	9	6	9	5	7	1	7	M	0	0	0	-	blotchy netting, nice size distribution

NORTH CAROLINA Table 8b (Cont'd.). Unreplicated Potato Trial, TRS/VGJREC, Washington Co. Planted 3-17,18-97 Harvested 7-1,2-97 106 DAP)

CLONE	Plant Data ¹			Tuber Data ¹			Tuber Defects ²			Chip	
	Type	Rx. ^a	Rx. ^b	Mat.	Color	Shape	App. Size	Internal Necrosis	Hollow Heart	Color ³	Comments
NYP21-2	9	7	8	7	7	1	5	0	0	2	medium size, blocky
NYP32-3	7	9	9	6	8	4	7	0	0	-	lots of smalls, nice skin, too flat
NYP63-1	9	9	9	7	7	2	5	0	0	-	skins
NYP73-2	5	7	9	6	9	3	7	3	0	-	flats
NYQ3-12	5	8	9	4	8	1	5	0	1	3	lots of smalls
NYQ8-2	5	9	9	8	7	3	3	0	0	-	skins, bruising, infected lenticels
NYR17-11	2	9	9	5	9	1	7	0	0	-	nice shape & size distribution
NYR17-19	2	9	9	5	8	4	5	0	0	-	too many oblongs
NYR17-2	9	5	9	4	8	1	5	2	0	-	lots of greens
NYR17-20	5	9	9	8	8	1	5	0	0	-	mixed sizes, growth cracks
NYR17-7	3	9	8	7	8	3	9	0	0	2	nice skin, some flats and points
NYR170-6	5	8	8	8	8	1	5	3	0	-	prominent lenticels, too small
NYR18-4	6	8	9	8	7	3	5	0	0	-	growth crack, flat
NYR18-6	5	8	7	5	9	3	7	1	0	-	BV nice skin, too small, pts
NYR19-20	9	9	9	7	7	2	7	1	0	-	blocky
NYR19-7	6	8	9	5	7	5	9	4	0	-	soft rot, lots of skins, bruises
NYR41-11	6	9	9	8	8	2	9	0	0	2	good crop!, nice skin, too small?
NYR41-18	5	9	9	7	7	1	9	4	0	-	spongy

¹. See the standard NE-184 rating system for key to codes: a) disease reaction, b) pollution reaction.². Number per 40 tubers - 10 tubers per replicate.³. Chip color supplied by Wise Foods. 1 = paper white; 4 = acceptable; 5 = barely acceptable; 6 = unacceptable; 9 = black chip.

NORTH DAKOTA POTATO VARIETY TRIALS AND BREEDING REPORT

Richard Novy¹, Bryce Farnsworth¹, and Mike Schwalbe¹ in collaboration with Nikolay Balbyshev¹, Neil Gudmestad², Edna Holm³, Jim Lorenzen¹, Roald Lund¹, Paul Orr⁴, Duane Preston⁵, Gary Secor², Joe Sowokinos⁶, Brad Brummond⁷.

Crossing and Seedling Production

In 1997, a total of 2,601 crosses were made in the greenhouse resulting in the production of 424 families. Thirty percent of the families had one or more parents that were identified as having late blight resistance. During the summer of 1997, 123,414 seedlings were grown for minituber production--a 33% increase since 1996. The increase in seedling numbers reflects the breeding program's efforts to develop late blight resistant cultivars. Twenty-two percent of the potato families planted for seedling tuber production in 1997 had one or more parents that were identified as having late blight resistance. In collaboration with Drs. Gudmestad and Secor, approximately 7,000 potato seedlings were screened for late blight resistance using a detached leaf assay this past summer. These evaluations provide the breeding program with valuable data on late blight resistance within a family at a very early stage of the breeding program.

1st Year Selections

Approximately 84,500 red and white-skinned seedlings were grown at the Langdon Agricultural

¹ Department of Plant Sciences; ² Department of Plant Pathology; ³ Department of Food and Nutrition, all at North Dakota State University;

⁴ USDA/ARS; ⁵ Ext. Service, NDSU/UMN;

⁶ UMN; ⁷ Walsh Co. Ext. Service, NDSU.

Technical assistance of the following people is gratefully acknowledged:

Dean Peterson, Myron Thoreson, Galen Thompson, Anne Erickson, and Louise Heinz. Special thanks to Carl Hoverson and Brian Vculek for the use of their land and the maintenance of the irrigated trials during the 1997 growing season.

Financial support of the breeding program by the Red River Valley Potato Growers Association is gratefully acknowledged.

Experiment Station, and an additional 8,200 russet seedlings were grown and evaluated at the Horticulture Research Farm at Absaraka. The russet selections were moved to Absaraka (with its associated warmer soil temperature) to improve the expression of russetting on the tubers. However, the presence of the russet seedlings at Absaraka has utilized land that could be used for the evaluation of a greater number of second year selections. Rather than be limited at this critical stage of the breeding program, the decision was made to move the russet seedlings back up to Langdon in 1998. Seedlings were planted on June 6th at Absaraka and on May 20th and 21st at Langdon. Evaluation and harvesting was conducted September 8-10 at Langdon and October 26th at Absaraka.

Advanced Selections

Replicated plantings of 1,072 second year selections from the 1996 seedling crop were planted at Grand Forks and Absaraka. A total of two hundred and twenty-two second-year selections were saved at harvest from both sites. Of the advanced material (>2 year material), 389 selections were planted and 162 were saved at harvest. Third year and older selections were planted at the Casselton Agronomy Seed Farm for clean seed stock production.

Cultivar and Advanced Selection Yield Trials

Trials were conducted under dryland conditions at Grand Forks (Potato Research Farm) and at Park River, ND. In addition, two irrigated trials were established on growers' fields near Oakes and McCanna, ND. Spacing, fertility, planting and harvest dates are listed in **Table 1**. The four trials, with a few entry differences, were replicates of one another. They consisted of standard and newly released varieties, and advanced NDSU, Idaho and Oregon selections. The replication across sites allowed for the assessment of the potato selections and cultivars under both dryland and irrigated conditions. The Grand Forks site also consisted of two additional trials -- a Secondary trial consisting of additional ND selections, and an Out-Of-State trial consisting primarily of entries from Texas and Europe.

Plots in the dryland and irrigated trials consisted of four replications of 25 and 20 hills respectively. A randomized complete block design was used at McCanna, Park River and Grand Forks, while a completely randomized design was used at Oakes.

Irrigated Sites

McCanna: The average total yield of the 35 entries at the McCanna site was 450 cwt/A. Average U.S. No. 1 yield was 396 cwt/A. *Lili*, a potential cultivar for fry production with yellow flesh and skin was the the highest yielding with a U.S. No. 1 yield (cwt/Acre) of 566 (Table 2). ND860-2 was the lowest yielding entry at 247. ND5084-3R was the highest-yielding red at 502, outyielding *Red Pontiac* at 479. The size distribution between ND5084-3R and *Red Pontiac* was quite different however, with *Red Pontiac* having a much larger percentage of tubers in the >3" category (42% -vs- 12%). ND2470-27 was the highest yielding white-skinned chipping variety at 513, significantly outyielding the standard chipping cultivars *Snowden* (370), and *Norchip* (350). ND2470-27 also had no incidence of internal defects among 48 tubers examined. Again, for the second year, the highest yielding russet in the McCanna trial was the Idaho selection A79180-10 at 487, which significantly outyielded Russet Burbank at 326. A79180-10 was rated quite highly for french fry production in 1995, but received lower but acceptable ratings in 1996 (Table 9).

Oakes: The average total yield of the 34 entries evaluated at this site was 317 cwt/A. Average U.S. No. 1 yield was 248 cwt/A. The Idaho russet selection, A79180-10, was the highest yielding entry for U.S. No. 1's at 381, significantly outyielding the standard fry cultivars *Russet Burbank* (200) and *Shepody* (229) (Table 3). ND860-2, as at McCanna, was the lowest yielding entry at 208. ND2470-27, a white-skinned chipping cultivar was tied with *Red Pontiac* for the second-highest yielding entry at 346. As noted in the McCanna trial, ND2470-27 had a low incidence of internal defects at Oakes. ND5084-3R, the highest yielding red in the McCanna trial was the second-highest yielding red after *Red Pontiac* at 320. ND3574-5R was also worthy of mention, closely following ND5084-3R at 303. Both ND5084-3R and ND3574-5R had a lower incidence of hollow heart than *Red Pontiac*.

Non-Irrigated Sites

Park River: Last used as a test site in 1994, a trial was again established at Park River in collaboration with Brad Brummond, Walsh County Extension Agent. Average total yield of all entries at the site was 233 cwt/A. Average U.S. No. 1 yield at the site was 164 cwt/A. The highest yielding entry was *Red Pontiac* at 281 followed closely by *NorValley* at

278 (Table 4). Both *NorValley* and *Red Pontiac* significantly outyielded all other entries in the trial. Again, A79180-10 was the highest yielding russet entry at 215.

Grand Forks: Three trials were conducted under dryland conditions at the Potato Research Farm. These trials (State, Secondary, and Out-of-state) looked good up to the end of June into early July when approximately 4.5" of rain fell during an 11 day period. Flooding of the trials occurred with the impact being extremely low yields. The data from the trials has been summarized for this report (Tables 5, 6, and 7), *but the relative merit of the entries in these trials cannot be effectively assessed due to the impact the flooding had on yields.* Nonetheless, this yield data does provide an assessment of performance in water-saturated soil. Worthy of mention was ND5822C-7 (Table 6), with a high (89%) U.S. No. 1 percentage resulting in a U.S. No. 1 yield of 143 cwt/A.

Summary: The performance of the entries at the Oakes, McCanna, and Park River sites have been summarized in Table 8. The Grand Forks trial has not been included due to the poor yields obtained.

Processing Trials

French Fries: Samples were tested for french fry quality by the Food and Nutrition Department using a taste panel. Sensory characteristics evaluated were fry color, flavor and texture (Table 9). All clones evaluated had acceptable scores with the exception of clone ATX84378-1Ru which rated poorly for both color and texture.

Baking, Boiling and Microwaving: Tubers of 25 potato clones that had been grown at both Grand Forks (dryland) and McCanna (irrigated) in 1996 were evaluated for the following sensory characteristics in each of three cooking categories:

Boiling: Characteristics examined were color immediately and four hours after cooking, mealiness, and flavor.

Baking: Mealiness, color, and flavor were evaluated.

Microwaving: Mealiness, color, and flavor were evaluated.

The summation of scores across all three cooking categories at both sites identified the following top 10 cultivars and advanced selections: *Shepody*,

ND2470-27, ND4027-4Russ, A79180-10, ND2471-8, *Atlantic*, *Russet Burbank*, I426, ND2676-10, and N8-14.

Among eight European cultivars grown at the Carrington site in 1996, *Asterix* and *Disco* received the highest ratings.

Chipping: The flooding at Grand Forks last year adversely affected chipping quality, with no selections or cultivars chipping acceptably from 43°F storage (with or without reconditioning).

Promising Selections and Cultivars--Summary for 1997

White Chippers

NorValley, a white chipping cultivar with cold-chipping properties and a low incidence of internal defects, significantly out-yielded all other white selections/cultivars under dryland conditions at the Park River site. In the irrigated trials, its average U.S. No. 1 yield was 314 cwt/A--very similar to *Snowden* at 318 cwt/A and less than that of *Atlantic* at 388 cwt/A.

ND2676-10 also has cold chipping properties and was entered in the North Central Regional Potato Variety Trial (NCRPVT) for the second year in 1997. In the 1996 NCRPVT, (6 trial sites) its average U.S. No. 1 yield was 248 cwt/A compared to *Snowden* at 282 cwt/A, *Norchip* at 234 cwt/A, and *Atlantic* at 317 cwt/A. Its average U.S. No. 1 yield under irrigated conditions was 368 cwt/A. At Park River it yielded 152 cwt/A. In the past it had been noted for erratic yields that were thought to be due to poor quality seed. Higher quality seed has since been used with an associated better performance.

One of the highest yielding chippers in the irrigated trials in 1996, ND2470-27 again was outstanding in 1997. It was the highest-yielding white chipper at both Oakes and McCanna. Average U.S. No. 1 yield across the two irrigated sites in 1997 was 430 cwt/A. At Park River it also was among the top three yielding white chippers at 190 cwt/A. It also has cold chipping properties and could be used as tablestock with high sensory ratings for boiling, baking, and microwaving in 1995 - 1997.

Other white chippers that performed well in 1997 were ND4778-2 and N8-14. ND3828-15 was entered in the NCRPVT in 1997--a decision as to

carry it forward another year will be made based on its performance in the NCRPVT.

Red Selections

Among the red selections, ND3574-5R and ND5084-3R were the top yielders in 1997. Both have a deeper red color than *Red Norland* from the field. U.S. No. 1 yields of ND5084-3R, ND3574-5R, and *Red Pontiac* averaged across Oakes, McCanna, and Park River were 343, 300, and 368 cwt/A, respectively. ND5084-3R and ND3574-5R tend to have a smaller percentage of oversize tubers than does *Red Pontiac*. A potential weakness of ND3574-5R is a short tuber dormancy. This may be negated by the use of sprout inhibitors. ND5084-3R has been noted as having a problem with stolon attachment. Increasing the time between vine kill and harvest may allow the stolons to separate more cleanly from the tubers.

With a yield and maturity similar to *Red Norland*, ND3196-1R has very nice tuber type and a darker skin color than *Red Norland*. For the first time this year, growth cracks were observed very early in the development of tubers at the Park River site. *Red Norland* also showed this same problem at the site, and cullage was high in both ND3196-1R and *Red Norland*. This problem was not observed at the other sites, or in other trials in the past. Growers in the immediate area also commented on an increased incidence of growth cracks in the red cultivars. The environmental conditions responsible for the increased incidence of tuber cracking are not known.

ND2225-1R has entered its third year year in the NCRPVT. Based on the results of this year's trials, a decision will be made regarding its release as a cultivar. Its main weakness is the development of russeted skin or "buckskin" under certain field conditions (thought to be heavier soils). This year, it was noted that a high percentage of seed pieces developed what appeared to be soft rot soon after cutting. This had a negative impact on stand establishment and subsequent yields in the 1997 trials.

Russets

The most promising russet selection in 1997 was A79180-10. This Idaho selection was the highest yielding russet at McCanna in 1996 and at McCanna, Oakes, and Park River in 1997. Its U.S. No. 1 yield across all three sites in 1997 was 361 cwt/A as compared to *Shepody* at 292 cwt/A, and *Russet Burbank* at 217 cwt/A. In 1995 it had

excellent french fry evaluation score--somewhat lower but acceptable in 1996. It also has scored well for sensory qualities and could be a dual-purpose selection. However, its lightly-russeted skin, may limit its use for tablestock.

Other promising russet selections are ND4093-4Russ and ND4027-4Russ. While not as high yielding as A79180-10, these russet selections compare favorably with *Russet Burbank*. ND4093-4Russ has a nice tuber type with excellent russetting. In sensory evaluations it compared favorably with *Russet Burbank* for fry color, taste, and texture. However, its lower specific gravity may limit its use for processing. ND4027-4Russ, with favorable sensory ratings for boiling, baking, and microwaving, has a higher specific gravity than ND4093-4Russ and could be used as a dual-purpose russet.

Germplasm Enhancement Update

A major objective of the NDSU program is the incorporation of resistance to the newer genotypes of *Phytophthora infestans*, such as the US-8 genotype that predominates in North Dakota. Crosses utilizing parents with genetic resistance continued this past winter and their progeny were grown in the greenhouse this past summer. Field selections were also made within late blight resistant families this Fall. These clonal selections will be grown in the greenhouse this winter and evaluated for late blight resistance in collaboration with Drs. Gary Secor and Neil Gudmestad of the Plant Pathology Department at NDSU.

Early in 1996, the breeding program requested and received late blight resistant germplasm from the USDA potato breeding programs at Beltsville, MD and Aberdeen, ID. The material was received as both sexual seed and as single minitubers. These clones (when extra seed became available) as well as selected potato cultivars were included in the late blight plots at Prosper, ND in 1997. In the Fall, hills of the resistant clones were dug and evaluated and those with the best agronomic properties selected. **Table 10** provides information on the foliar resistance of the cultivars and the selected blight-resistant clones. The cultivars displayed a range of resistance, with some showing susceptibility while others showed moderate resistance. Tubers of the selected experimental clones are also currently being tested for resistance to tuber blight. The selected clones and those

cultivars with moderate resistance to foliar blight will be incorporated into our crossing block this coming winter.

The breeding program is also incorporating genetic resistance to *Verticillium* wilt, early blight, silver scurf, PLRV, PVY, green peach aphid and Colorado potato beetle into commercially-acceptable clones. ND5822C-7 is an example of our efforts in this area. Identified as resistant to Colorado potato beetle in preliminary screenings by Drs. Lorenzen and Balbyshev, ND5822C-7 is also notable for its yield and tuber-type under the stressful growing conditions at the Grand Forks site in 1997 (**Table 6**).

Table 1. Spacing, Fertilizer, Soil Type, Planting and Harvest Dates of the 1997 North Dakota Potato Variety Trials.

Location	Spacing		Fertilizer Applied	Soil Types	Planting Date	Harvest
	Row	Plant				
Park River	38"	12"	40-10-10 @ 250 lbs/A	Glyndon silt loam	5-10	9-4
Grand Forks	38"	12"	50 lbs N, 29 lbs P, 15 lbs K, 0.5 lbs Boron, 4 lbs Zn / Acre	Bearden clay loam	5-30	10-6
McCanna	38"	12"	46-0-0 (urea) @ 241 lbs/A	Sandy loam	5-2	9-22
Oakes	38"	12"	105 lbs/A of N (Total with soil nitrogen= 145 lbs/A), 30 lbs/A of P ₂ O ₅ , 25 lbs/A of K ₂ O	Hecla fine sandy loam	5-7	9-29

Note: The North Dakota advanced selections described in these trials can be distinguished as russet, red, or white-skinned by:

ND5555-5 = white

ND5555-5R = red

ND5555-5Russ = russet

Table 2. Performance of Potato Cultivars and Advanced Selections Under Irrigated Conditions at McCanna, ND--1997

Variety/Selection	Yield (cwt/acre)		% U.S. No. 1	Tuber Categories as % of Total Yield					Specific Gravity	% Internal Defects ^b			Tuber Number per Hill
	U.S.# 1 ^a	Total		Cullage	Undersize (<2")	2 - 2.5 "	2.5 - 3" >3"	HH		VD	IBS		
Lili	566 a	706	80	9	11	28	50	3	1.076	2	0	2	15
Picasso	545 ab	610	89	5	7	23	50	16	1.074	4	0	2	7
ND2470-27	513 abc	548	94	2	4	22	61	11	1.085	0	0	0	12
ND5084-3R	502 abcd	536	94	1	7	26	55	12	1.066	0	6	0	12
ND2676-10	488 abcde	529	92	1	7	41	50	1	1.083	8	4	8	15
A79180-10	487 abcde	515	95	2	4	20	66	9	1.093	2	2	2	11
Red Pontiac	479 abcdef	523	92	7	2	9	40	42	1.068	4	0	4	9
ND3647-6	476 abcdef	563	85	5	11	40	43	2	1.088	15	2	0	10
Shepody	467 abcdefg	535	87	8	5	24	47	16	1.085	8	0	2	5
Atlantic	447 bcdefgh	496	90	6	5	23	50	17	1.093	2	4	4	8
SW88109	438 bcdefgh	523	84	8	8	31	47	6	1.068	0	2	0	14
ND3574-5R	422 bcdefghi	449	94	1	5	32	56	7	1.060	0	2	0	17
Red Norland	419 bcdefghi	444	94	3	3	25	62	7	1.067	0	0	0	10
ND4778-2	409 cdefghij	438	93	1	6	30	61	2	1.080	4	2	2	8
NorDonna	405 cdefghij	451	90	4	6	25	53	11	1.068	0	21	0	11
A82119-3	391 cdefghij	418	94	1	6	33	52	8	1.083	15	2	0	8
Russet Norkotah	389 cdefghij	428	91	1	9	41	45	5	1.079	4	6	0	8
NDO1496-1	387 cdefghij	415	93	3	4	22	56	15	1.090	0	0	0	7
NorValley	386 cdefghij	439	88	4	8	30	50	8	1.079	2	6	0	11
Romano	375 defghijk	443	85	5	10	39	44	1	1.082	6	10	0	9
ND3828-15	374 defghijk	430	87	9	4	18	58	11	1.080	2	2	4	6
Snowden	370 defghijk	403	92	0	9	43	47	1	1.098	0	2	0	7
N8-14	356 efghijk	417	85	3	12	49	36	0	1.079	2	0	2	11
ND3196-1R	353 efghijk	390	91	3	7	33	54	3	1.079	6	0	0	8
Norchip	350 fghijk	443	79	11	10	37	41	1	1.086	0	0	4	12
I 426	349 fghijk	376	93	3	4	22	63	9	1.077	0	0	2	5
ND5104-1Russ	334 ghijk	368	91	2	8	46	43	0	1.071	0	0	0	8
ND2225-1R	332 ghijk	423	79	5	16	46	31	2	1.070	0	2	8	14
Russet Burbank	326 hijk	433	75	14	10	42	31	3	1.087	52	0	4	10
Goldrush	319 hijk	351	91	5	5	28	55	7	1.072	8	10	2	10
ND4027-4Russ	317 hijk	368	86	1	13	45	40	1	1.087	8	0	4	11
ND3636-1	287 jik	366	78	4	19	46	31	0	1.085	4	0	2	18
ND4093-4Russ	276 jk	323	86	1	14	47	37	1	1.074	10	0	0	8
ND5104-2Russ	274 jk	347	79	1	21	52	26	1	1.073	0	0	0	13
ND860-2	247 k	290	85	1	16	46	35	2	1.083	0	4	2	11

^a Yield means with the same letter are not considered significantly different from one another based on Duncan's Multiple Range Test with an alpha value of 0.05.^b Internal Defects abbreviations: HH = Hollow Heart, VD = Vascular Discoloration, and IBS = Internal Brown Spot.

Values represent the percentage of 48 tubers (2.5-3" in size) that had the internal defect

Table 3. Performance of Potato Cultivars and Advanced Selections Under Irrigated Conditions at Oakes, ND--1997

Variety/Selection	Yield (cwt/acre)		% U.S. No. 1	Tuber Categories as % of Total Yield				Specific Gravity	Internal Defects ^b		
	U.S.# 1 ^a	Total		Cullage	Undersize (<2")	2 - 2.5 "	2.5 - 3 "		HH	VD	IBS
A79180-10	381 a	459	83	9	7	20	57	7	1.082	21	0
ND2470-27	346 ab	387	89	4	7	24	59	5	1.076	0	2
Red Pontiac	346 ab	410	84	9	6	19	54	12	1.065	17	0
Atlantic	328 abc	382	86	5	9	27	51	7	1.085	13	0
ND5084-3R	320 abcd	368	87	2	11	28	51	8	1.061	6	0
Sante	317 abcd	430	74	7	19	45	29	0	1.086	0	8
ND3574-5R	303 abcde	341	89	2	9	27	59	3	1.057	2	2
1426	293 abcdef	345	85	4	10	33	48	5	1.070	0	8
Goldrush	283 abcdefg	356	79	8	13	43	34	2	1.062	10	0
Snowden	266 bcdefgh	293	91	1	8	37	54	1	1.087	15	0
N8-14	258 bcdefgh	318	81	3	16	46	32	2	1.073	0	4
ND01496-1	251 bcdefgh	275	91	3	6	34	52	4	1.080	0	2
ND2676-10	247 bcdefgh	295	84	2	15	43	40	0	1.078	13	0
NorValley	241 bcdefgh	294	82	6	13	29	46	6	1.073	0	0
ND5104-1Russ	238 bcdefgh	265	90	2	8	51	39	0	1.060	0	6
Fianna	237 bcdefgh	394	60	15	25	44	15	1	1.087	0	0
Russet Norkotah	237 bcdefgh	288	83	4	14	49	33	1	1.070	10	0
ND4093-4Russ	236 bcdefgh	284	83	2	16	43	39	1	1.070	8	0
NDL128-11	232 bcdefgh	325	71	7	22	55	16	0	1.085	52	0
NorDonna	230 bcdefgh	309	74	1	26	46	26	1	1.068	0	10
Shepody	229 bcdefgh	318	72	14	15	43	28	1	1.079	23	4
Agria	228 bcdefgh	354	64	13	24	45	19	0	1.078	21	0
ND3196-1R	224 cdefgh	296	76	4	20	50	27	0	1.064	0	0
ND4778-2	220 cdefgh	261	84	3	13	39	45	0	1.077	4	0
ND3828-15	217 cdefgh	299	73	15	13	33	38	1	1.075	2	0
ND3647-6	216 cdefgh	375	58	27	15	37	20	0	1.081	10	2
Red Norland	209 cdefgh	263	79	7	15	38	37	4	1.054	2	0
ND2225-1R	207 defgh	296	69	7	24	42	27	1	1.062	0	0
Russet Burbank	200 defgh	327	61	25	17	39	17	2	1.081	8	0
A82119-3	187 efgh	242	77	3	21	49	26	0	1.078	23	0
ND3636-1	181 fgh	262	69	3	28	49	20	0	1.077	2	0
ND4027-4Russ	180 fgh	235	77	1	28	47	24	0	1.076	6	0
ND5104-2Russ	165 gh	218	76	4	21	50	26	0	1.064	6	0
ND860-2	160 h	208	77	4	19	49	28	0	1.074	0	6

^a Yield means with the same letter are not significantly different from one another based on Duncan's Multiple Range Test with an alpha value of 0.05.^b Internal Defects abbreviations: HH = Hollow Heart, VD = Vascular Discoloration, and IBS = Internal Brown Spot.

Table 4. Performance of Potato Cultivars and Advanced Selections Under Non-Irrigated Conditions at Park River, ND--1997

Variety/Selection	Yield (cwt/acre)		% U.S. No. 1	Tuber Categories as % of Total Yield				Specific Gravity	% Internal Defects ^b			Maturity
	U.S.# 1 ^a	Total		Cullage	Undersize (<2")	2 - 2.5 "	2.5 - 3 "		HH	VD	IBS	
Red Pontiac	281 a	315	89	5	6	19	70	1	1.072	0	0	4
NorValley	278 a	338	82	4	14	41	39	2	1.081	2	0	4
A79180-10	215 b	252	85	3	11	31	54	0	1.099	0	0	4
ND5084-3R	208 bc	254	82	3	15	22	58	2	1.062	4	0	5
ND3828-15	201 bcd	290	69	19	11	24	44	1	1.081	0	0	3
NorDonna	198 bcd	255	78	1	23	38	38	0	1.073	4	0	4
ND2470-27	190 bcd	237	80	8	12	31	49	1	1.095	4	0	3
Atlantic	190 bcd	258	74	15	11	28	46	0	1.091	31	0	3
ND4778-2	183 bcde	282	65	25	10	20	45	1	1.087	17	0	3
Shepody	181 bcde	246	74	8	19	41	32	0	1.084	8	2	4
ND860-2	179 bcdef	236	76	10	15	35	40	0	1.094	0	0	4
I426	178 bcdef	238	75	10	15	30	44	0	1.083	2	4	3
ND3574-5R	175 bcdef	242	72	12	16	30	42	0	1.069	0	0	2
Snowden	169 bcdefg	209	81	2	18	41	40	0	1.098	4	2	4
NDO1496-1	164 bcdefgh	220	75	9	17	37	36	1	1.095	4	0	3
Russet Norkotah	159 bcdefgh	213	75	7	19	34	39	2	1.085	15	0	3
Goldrush	153 bcdefghi	225	68	3	30	43	24	0	1.079	0	0	3
ND2676-10	152 bcdefghi	228	66	9	25	39	27	0	1.090	4	0	3
ND3647-6	151 cdefghi	256	59	14	30	33	23	0	1.086	8	2	4
A82119-3	145 cdefghi	209	69	4	26	43	26	0	1.084	21	0	5
NDL128-11	142 defghij	226	63	6	31	43	19	0	1.091	21	0	4
N8-14	126 efghij	208	61	8	32	37	23	0	1.084	2	8	3
Russet Burbank	124 efghij	203	61	16	23	38	23	0	1.082	4	2	5
ND4093-4Russ	116 fghij	175	66	2	34	46	18	0	1.083	13	0	2
ND3636-1	112 ghij	193	58	1	43	40	16	0	1.091	8	0	2
ND3196-1R	105 hij	221	48	31	22	32	15	0	1.078	2	0	2
Red Norland	92 ij	198	46	36	19	30	15	1	1.068	2	0	2
ND4027-4Russ	92 ij	175	53	4	43	37	15	0	1.093	2	2	4
ND2225-1R	83 j	143	58	14	30	35	21	0	1.069	2	0	2

^a Yield means with the same letter are not significantly different from one another based on Duncan's Multiple Range Test with an alpha value of 0.05.

^b Internal Defects abbreviations: HH = Hollow Heart, VD = Vascular Discoloration, and IBS=Internal Brown Spot.

Values represent the percentage of 48 tubers (2.5-3" in size) that had the internal defect.

Table 5. 1997 State Trial: Performance of Potato Cultivars and Advanced Selections Under Non-Irrigated Conditions at Grand Forks, ND

Variety or Selection	U.S. #1 Yield (Cwt/Acre)	Total Yield (Cwt/Acre)	% U.S. #1 of Total Yield	Specific Gravity	Maturity
Russet Norkotah	116	148	78	1.081	4
ND5084-3R	110	123	89	1.066	5
NorValley	98	128	77	1.079	3
Atlantic	95	119	80	1.090	4
ND01496-1	95	125	76	1.094	5
NorDonna	90	114	79	1.080	4
Snowden	86	114	75	1.089	5
ND4778-2	86	106	81	1.083	4
ND5104-1Russ	84	107	79	1.076	3
Red Pontiac	83	117	71	1.067	4
A79180-10	78	97	80	1.090	5
ND3828-15	78	118	66	1.084	4
ND3196-1R	76	98	78	1.079	3
NDL128-11	71	114	56	1.093	5
ND3647-6	70	113	62	1.083	4
I426	64	95	67	1.080	4
ND3574-5R	64	95	67	1.067	3
ND2225-1R	63	85	74	1.082	3
Shepody	62	115	54	1.090	4
ND4093-4Russ	61	103	59	1.083	4
Goldrush	59	93	63	1.083	3
Norchip	58	101	57	1.089	3
Red Norland	58	81	72	1.075	2
ND2470-27	56	71	79	1.086	4
ND860-2	54	94	57	1.088	3
A82119-3	54	85	64	1.082	5
ND4027-4Russ	54	95	57	1.089	3
N8-14	54	90	60	1.080	3
ND2676-10	44	81	54	1.086	3
ND3636-1	34	64	53	1.088	3
Russet Burbank	28	69	41	1.080	5

Table 6. 1997 Secondary Trial: Performance of Potato Cultivars and Advanced Selections Under Non-Irrigated Conditions at Grand Forks, ND

Cultivar or Selection	U.S. #1 Yield (Cwt/Acre)	Total Yield (Cwt/Acre)	% U.S. #1 of Total Yield	Specific Gravity	Maturity
ND5822C-7	143	161	89	1.090	5
Russet Norkotah	105	143	73	1.082	4
ND5775-3	102	142	72	1.095	4
ND4240-9Russ	99	134	80	1.082	4
Red Norland	97	122	80	1.074	2
ND4219-14Russ	96	136	71	1.082	4
Goldrush	94	136	69	1.078	4
ND5289-1R	93	136	68	1.086	3
ND5256-7R	92	129	71	1.083	3
TXAU657-27Russ	88	119	74	1.087	5
TX1229-2Russ	87	129	67	1.082	4
ND4233-1Russ	82	127	65	1.089	4
ND5324-4	80	120	67	1.095	3
Norchip	80	124	65	1.093	3
ND2676-12	79	120	66	1.092	3
Pike	76	101	75	1.094	5
ND5002-3R	76	111	69	1.076	4
C0083008-1	65	99	66	1.091	5
ND4519-12	62	100	62	1.085	3
NDO2438-6R	61	72	85	1.067	4
Russet Burbank	58	132	36	1.084	5
NDO2438-7R	56	76	74	1.076	5
ND4621-5R	56	100	56	1.078	3
DT6063-1R	55	88	63	1.085	3
NDT8-731-1R	54	69	78	1.070	4

Table 7. 1997 Out-Of-State: Performance of Potato Cultivars and Advanced Selections Under Non-Irrigated Conditions at Grand Forks, ND

Cultivar or Selection	U.S. #1 Yield (cwt/A)	Total Yield (cwt/A)	% US #1 of Total Yield	Specific Gravity	Maturity
TXNS278	137	194	71	81	4
NDTX4930-5	125	159	79	86	5
Russet Norkotah	115	177	65	80	4
ATX85404-8	109	149	89	84	5
TXNS112	100	166	73	78	4
Disco	98	168	58	98	5
TXNS223	96	153	63	77	4
Red Norland	95	139	68	73	3
Norchip	93	149	62	92	3
NDO4588-5R	92	132	70	67	4
NDO4592-3R	92	128	72	77	4
TX1385-12Russ	89	125	71	80	5
Dali	81	132	69	79	4
NDO5108-1R	79	114	69	80	4
NDO4300-1R	79	118	67	80	3
NDO4438-1R	77	138	56	78	4
NDO4323-2R	75	101	74	84	3
Asterix	73	172	42	87	5
Fianna	71	113	63	86	5
Diamant	69	133	52	93	4
NDA2031-2	69	101	68	84	5
NDO3994-2R	56	86	65	71	5
Russet Burbank	45	144	31	87	5
SW91102	45	85	53	103	5
Rikea	44	121	36	80	4
Aziza	43	91	47	84	4

Table 8. Summary of U.S. No. 1 Yields (cwt/A) Across All Sites

Clone	Irrigated Sites			Non-Irrigated	Average Yield Across All Entered Sites
	Oakes	McCanna	Average	Park River	
ND2225-1R	207	332	270	83	208
ND2470-27	346	513	430	190	350
ND2676-10	247	488	368	152	296
ND3196-1R	224	353	289	105	227
ND3574-5R	303	422	363	175	300
ND3636-1	181	287	234	112	193
ND3647-6	216	476	346	151	281
ND3828-15	217	374	296	201	264
ND4027-4Russ	180	317	249	92	196
ND4093-4Russ	236	276	256	116	209
ND4778-2	220	409	315	183	271
ND5084-3R	320	502	411	208	343
ND5104-1Russ	238	334	286	not entered	286
ND5104-2Russ	165	274	220	not entered	220
ND860-2	160	247	204	179	195
A79180-10	381	487	434	215	361
A82119-3	187	391	289	145	241
Agria	228	not entered	228	not entered	228
Atlantic	328	447	388	190	322
Fianna	237	not entered	237	not entered	237
Goldrush	283	319	301	153	251
I426	293	349	321	178	273
N8-14	258	356	307	126	247
NDL128-11	232	not entered	232	142	187
NDO1496-1	251	387	319	164	267
NorDonna	230	405	318	198	278
NorValley	241	386	314	278	302
Russet Burbank	200	326	263	124	217
Russet Norkotah	237	389	313	159	261
Red Norland	209	419	314	92	240
Red Pontiac	346	479	413	281	368
Sante	317	not entered	317	not entered	317
Shepody	229	467	348	181	292
Snowden	266	370	318	169	268
Norchip	not entered	350	350	not entered	350
Lili	not entered	566	566	not entered	566
Picasso	not entered	545	545	not entered	545
Romano	not entered	375	375	not entered	375
SW88109	not entered	438	438	not entered	438
Average U.S. No.1 Yield At Sites:	248	396		164	

Table 9. Average French Fry Evaluation Scores for 1996 Season.*

Cultivar or Selection	Color	Texture	Flavor
Grand Forks Site			
Russet Burbank	6.1	5.6	5.6
Norking Russet	5.9	6.5	6.3
Goldrush	6.6	6.5	6.3
Norqueen Russet	5.6	5.9	6.3
Shepody	7.2	5.7	5.2
A081775-3	6.3	6.2	6.1
A81478-1Russ	7.7	6.2	6.5
A79180-10	5.8	5.1	5.3
A81286-1	6.1	5.0	5.5
A82119-3	6.5	6.9	6.6
A8390-3	6.6	6.0	6.3
ATX84378-1Ru	4.9	4.6	5.6
ATX84706-2Ru	6.8	6.3	6.4
C0083008-1	6.7	6.1	6.4
ND3455-1Russ	5.6	5.3	5.4
ND4027-4Russ	6.3	6.1	6.1
ND4093-4Russ	6.6	6.1	6.4
ND4219-14Russ	6.6	6.4	6.5
ND4233-1Russ	6.4	6.3	6.4
ND4240-9Russ	5.9	6.1	6.2
TXAV657-27	6.2	6.3	6.2
Carrington Site			
Russet Burbank	7.4	6.8	6.7
Asterix	6.5	6.4	6.2
Felsina	6.1	6.6	6.3
Shepody	7.4	6.8	6.8
Aziza	6.4	6.1	6.2
Morene	6.6	5.8	6.0
Premier	5.2	5.6	5.9
Agria	5.7	6.0	5.7
Lili	7.2	6.2	6.3
Disco	6.8	6.3	6.1

*All scores are based on 3 and 6 separate evaluations of each cultivar for Grand Forks and Carrington, respectively. Six panelists participated in each evaluation for a total of 18 and 36 individual evaluations. The only exception was the Grand Forks' *Russet Burbank* control/reference sample for which there were 300 individual evaluations.

Rating Guide	7-9	Good
	5-6	Fair, and acceptable
	1-4	Poor, not acceptable

Table 10. Late blight reaction of Selections and Cultivars at the Prosper Research Station, 1997.
Basilio Salas, Gary Secor and Neil Gudmestad*

Clone (Parentage)	Necrotic tissue (%)			
	Aug-1	Aug-8	Aug-15	Aug-22
AND1-1 (<i>J101K6 x A84118-3</i>)	0	30	35	35
AND1-2 (<i>J101K6 x A84118-3</i>)	0	0	15	25
AND2-1 (<i>J103K7 x A84118-3</i>)	0	0	0	0
AND2-2 (<i>J103K7 x A84118-3</i>)	0	0	20	22
AND2-4 (<i>J103K7 x A84118-3</i>)	0	0	0	0
AND2-8 (<i>J103K7 x A84118-3</i>)	0	1	10	12
AND3-5 (<i>J138A4 x A84118-3</i>)	0	7	10	13
AND3-8 (<i>J138A4 x A84118-3</i>)	0	1	25	30
AND3-9 (<i>J138A4 x A84118-3</i>)	0	1	15	16
AND8-7 (<i>AWN86514-4 x A084275-3</i>)	0	5	35	41
BND1849-2 (<i>J138A12 x B1419-6</i>)	0	5	10	14
Dali	12	25	35	50
Diamant	32	60	85	100
Picasso	28	40	60	70
Rikea	25	45	60	82
Asterix	4	30	50	66
Sante	8	40	45	61
Aziza	2	15	35	46
Disco	1	15	50	48
SW91102	0	15	40	54
Romano	0	15	50	82
Agria	5	10	35	47
Fianna	6	30	50	57
Pike	1	30	65	97
Lili	2	25	45	47
Rosamunda	0	10	55	91
Red LaSoda	22	40	90	100

*Plants infected with US8 (A2) were transplanted into plots to act as inoculum source in mid-July. No fungicides were applied during the growing season. Due to space limitations and a limited amount of experimental clonal seed, plots were unreplicated and consisted of between 2-10 hills / clone.

OHIO

Richard Hassell, David M. Kelly,
E.C. Wittmeyer, John Elliott

Introduction to NE184 Trial

Twenty-eight varieties and clones from the NE184 Regional project were evaluated in replicated field trials located at the Ohio Agricultural Research and Development Center, Wooster, Ohio.

Methods

The seed samples when received from the NE184 project nursery were stored under recommended temperature and humidity conditions. A randomized complete block design with four replications was used.

The soil type is a well-drained Wooster silt loam with a pH 6.7, a phosphorus level of 112 lbs/A and a potassium level of 206 lbs/A, according to the analytical procedures of the Research and Extension Analytical Laboratory at the Ohio Agricultural Research and Development Center.

Fertilization consisted of 600 lbs/A of 10-20-20 disked in prior to planting and 600 lbs/A 10-20-20 banded at planting.

Following harvest on September 18, samples for chip quality evaluation were taken to the Pilot Plant, The Ohio State University, Columbus, Ohio, where the samples were held at ambient temperatures until early October (approximately 20 days) when chipping and specific gravity determinations were made. In addition, other samples were graded for market quality. At the time 10 tubers were taken at random from each replicate and checked for hollow heart and internal necrosis ratings (see Table 2).

Weather Conditions

Rainfall during the growing season (May-September) was 14.76 inches, 3 inches below the long-term average for Wooster.

Results:

This trial yielded several cultivars and selections that showed promise and may be included in the 1998 trial: NorDonna, BO 766-3, NY 103, Snowden, Cherry Red, and AF 1565-12.

Specific comments follow below.

Atlantic: Round to oval tubers--irregular surface--poor appearance. Round to slightly oval, heavy netting, tendency for tubers to be flattish. Wide range in size. Heavy yielder.

NorDonna: Round to slight oval shaped tubers with medium red color. Trace of second growth. Tubers are small to medium size. Appears to have better surface texture (marketability) than B0811-13. Promising--try again.

B0766-3: Round to slightly oval tuber with buff appearance. Some tubers have irregular surface, trace of second growth, trace of misshapened tubers. Appears to have sizing ability. Try again. Promising.

B0564-8: Round to slightly oblong tubers with cream colored appearance. Many small tubers. Large tubers have an irregular surface. No future.

Yukon Gold: Round tubers with cream colored skin. Wide range in size. Eyes red-pink. Irregular surface on larger tubers. No future.

Quaggy Joe: Round to oval tubers with light buff appearance, smooth surface. Excessive greening. Too much irregular surface. Too many tubers have an irregular surface. No future.

Katahdin: Round to slightly oval tubers with buff appearance. Most large tubers have irregular surface. Many misshapened tubers. Wide range in size. Doubtful future.

Kennebec: Round to oval tubers with light buff appearance. Severe irregular surface. Many tubers are misshapened. Second growth is serious. No future.

BO811-13: Round to oval tubers, dark red surface. Tubers tend to have irregular surface. Small to medium size. Biggest problem--rough appearance of surface. Doubtful.

B9922-11: Round to oval to oblong russet-type tubers with medium to heavy netting. No second growth. Major problems; irregular surface and misshapened. No future.

NY103: Round tubers with light tan-buff appearance, some tubers have irregular surface. Fairly uniform size. Trace of surface scab. Poor yield. Try again.

NY102: Round tubers with buff appearance and light netting. Apical end (on some tubers) tend to be recessed. Tuber size tends to be small. Larger tubers tend to have irregular surface.

Snowden: Round tubers with heavy netting. Apical end tends to be deep. Stem end is deeply recessed. Tubers have pink tinge.

Larger tubers have irregular surface. May have yield ability. No future fresh market (appearance)--may be ok for processing.

Cherry Red: Round to oval shaped tubers with light to medium red appearance. Surface tends to have netted skin. Smooth surface. Try again.

NY87 (Reba): Round tuber with buff appearance, light netting, larger tubers tend to have irregular surface. Trace of second growth and trace of greening. No future.

AF1480-5: Round to oval shaped tubers with light buff appearance. Second growth and misshapened are problems. No future.

AF1437-1: Round tubers with buff appearance, some netting. Shallow eyes. Apical end and stolon end tends to be indented. Too much variability in size/shape. No future.

ND2417-6 (NorValley): Round to oval shaped tubers with buff appearance. Major problem is irregular surface. Small size. No future.

AF1565-12: Round tubers with light-almost white surface. Medium size tubers are quite uniform. Some tubers tend to have irregular surface. Promising--fresh market.

AF1615-1: Round to slightly oval tubers with buff appearance. Some tubers have irregular surface. Second growth could be problem. May have yielding ability, but small tuber size. No future.

Dk Red Norland: Round to slightly oval tubers with light red appearance. Larger tubers tend to have an irregular surface. Color is too light for present market.

ND2471-8: Round to oval tubers. Major problems: second growth, small size, misshapened, poor appearance. No future.

AF1424-7: Round to slightly oval tubers with buff to nearly white appearance. Shallow eyes. Major problems: irregular surface and misshapened. Poor appearance. No future.

Century Russet: Round to oval to oblong tubers. Wide range in tuber size. Wide range in russetting--from netting to fairly heavy russetting. Second growth. Poor appearance. No future.

Superior: Round to oval shaped tubers with light cream appearance. Apical end tends to be deep. No uniform size. Some netting, trace of second growth. May have sizing ability, but poor appearance. No future. Larger tubers have irregular surface.

AF1433-4: Round tubers with buff appearance. Pitted scab could be problem. Larger tubers have irregular surface. Very little second growth. Trace of scab. No future.

B0856-4: Oval shaped tubers, almost russet-type. Medium netting to heavy russetting. Major problem: irregular surface and misshapened. Poor appearance. No future.

B1004-8: Oval to slightly oblong tubers, medium russetting. No second growth. Small size. Larger tubers have irregular surface. No size.

Introduction to Observational Trials

Seventy-seven entries from various parts of the country were evaluated in a replicated field trial located at the Ohio Agricultural Research and Development Center, Wooster, Ohio.

Methods

The seed samples when received were stored under recommended temperatures and humidity conditions. A randomized complete block design with at least two replications of each entry was used. Soil type was a well-drained Wooster silt loam with a pH 6.7 and phosphorus level of 112 lb/A and potassium level of 206 lb/A according to the analytical procedures of the Research and Extension Analytical Laboratory at the Ohio Agricultural Research and Development Center. Fertilization consisted of 600 lb/A of 10-20-20 disked in prior to planting and 600 lbs/A 10-20-20 banded at planting.

Following harvest on September 18, samples for chip quality evaluation only on those that we felt might have potential for Ohio were then taken to the pilot plant at The Ohio State University, Columbus, OH. Samples were held at ambient temperatures until early October (approximately 20 days) when chipping and specific gravity determinations were made. In addition, other samples were graded for market quality. At the time, 10 tubers were taken at random from each replicate and checked for hollow heart and other internal defects.

Results

This year conditions were ideal for making firm decisions on a number of cultivars. Out of the seventy-seven entries, only 20 entries were accepted for further evaluation (Tables 4, 5, 6). The reason for the dismissal of the other fifty-five entries are found in Table 7.

Specific comments on promising cultivars and selections follow below:

B1240-12: Round tubers with medium buff appearance, shallow eyes, shallow apical end. Holds shape quite well, may have surface scab problem. Keep--promising.

B1145-2: Round tubers with medium red appearance. Smooth tuber surface. Shallow eyes and shallow apical end. Fairly uniform tubers. Good skin texture. Promising.

B1492-10: Round tubers with medium to dark red appearance. Medium to small size. Promising. Fairly uniform. Try again.

B1091-29: Round tubers with netted appearance. Some tubers have an irregular surface. Deep apical end. Some tubers have an irregular surface. Try again.

B1344-18: Round to slightly oval tubers with smooth surface. Attractive appearance. Try again.

B1415-7: Round tubers, fairly smooth texture, shallow eyes. Attractive appearance - promising. Keep. Try again.

B1416-2: Medium size tubers with fairly smooth surface, but wide range in size. Promising. Keep.

B1321-21: Round tubers with fairly smooth surface. Uniform netting. Field sprouting is present. Trace of second growth. Keep for processing.

B1206-10: Round to slightly oval, light to medium netting. Appears to hold shape quite well. Promising--keep. Try again.

B1083-51: Round to slightly oval tuber with shallow eyes and shallow apical end. Attractive tubers. Promising. Try again.

R19-20: Fairly rough tuber shape, but wide range in size. Relatively smooth surface. Promising. Try again.

R41-11: Round, with slightly netted surface. Eyes tend to be indented. May be ok for processing. Try again.

R170-66: Round tubers with some netting. Wide range in irregular surface. Surface tends to have "flaky" appearance. Try for processing. Save.

R19-7: Round tubers with smooth surface. Shallow eyes. Uniform size and shape. Promising.

CF7523-1: Round to slightly oval tubers with a creamy white appearance. Eyes tend to be slightly deep. Appears to yield well. May have tendency for second growth.

Q3-12: Round to slightly oval tubers. Many with irregular surface. Severe scab problem. Second growth is present.

B0985-1: Round to oval, fairly smooth, dark red, shallow eyes. Wide range in size. Tuber tends to have irregular surface. Medium red appearance.

B0811-4: Medium red. Fairly uniform but small. Some tubers have an irregular shape.

B0564-9: Round to slightly oval tubers with heavy netting. Bud and apical ends are shallow. Promising. Processing.

B1004-8: Wide range in shape--oval to oblong. Light to medium surface. Second growth could be problem. Larger tubers tend to have rough appearance. Keep and try again.

Ohio Table 1. Yield, marketable yield, percent of yield by grade size distribution and specific gravity for varieties grown at Wooster, Ohio - 1997.

Cultivar	Total yield cwt/A	Marketable Yield		% of Total Yield			Specific Gravity
		U.S. #1 cwt/A	% STD	U.S. #1 (>1-7/8")	B Size	Culls	
Atlantic	251	216	121	86	6	8	1.075
NorDonna	162	123	69	76	19	5	1.061
BO 766-3	270	224	126	83	13	4	1.066
BO 564-8	218	168	94	77	19	4	1.074
Yukon Gold	202	170	96	84	8	8	1.078
Quaggy Joe	262	212	119	81	15	4	1.065
Katahdin (std)	228	178	100	78	17	5	1.063
Kennebec	244	188	106	77	13	10	1.070
B0811-13	214	180	101	84	13	3	1.073
B 9922-11	194	146	82	75	9	16	1.078
NY 103	235	217	122	92	7	1	1.064
NY 102	234	204	115	87	12	1	1.079
Snowden	263	224	126	85	11	4	1.078
Cherry Red	206	183	103	89	9	2	1.074
NY 87	272	237	133	87	10	3	1.072
AF 1480-5	249	147	83	59	15	26	1.076
AF 1437-1	232	202	113	87	10	3	1.066
ND 2417-6	250	190	107	76	22	2	1.069
AF 1565-12	221	194	109	88	11	1	1.078
AF 1615-1	217	177	99	82	18	0	1.072
DK. R. Norland	241	207	116	86	12	2	1.065
ND 2471-8	165	125	70	76	19	5	1.078
AF 14244-7	168	141	79	84	12	4	1.079
Century Russet	245	145	81	59	24	17	1.079
Superior	269	245	138	91	5	4	1.074
AF 1433-4	190	167	94	88	9	3	1.072
BO 856-4	221	161	90	73	13	14	1.071
B1004-8	207	153	86	74	18	8	1.069

Ohio Table 2. Tuber shape and appearance, hollow heart ratings, internal necrosis ratings and chip color for varieties grown at Wooster, Ohio - 1997.

Cultivar	Plant ¹ Maturity	Tuber ¹ Shape	Appearance	Hollow Heart %	Internal Necrosis %	Chip ² Color
Atlantic	8	2.0	4.0	0	0	1
NorDonna	8	2.5	6.5	0	0	3
BO 766-3	8	2.0	7.0	0	0	1
BO 564-8	5	2.0	5.0	0	0	2
Yukon Gold	8	2.0	4.0	0	0	3
Quaggy Joe	8	3.0	4.0	0	0	3
Katahdin (std)	8	3.0	5.0	0	0	2
Kennebec	8	4.0	2.5	0	0	3
BO 811-13	8	3.0	4.0	0	0	1
B 9922-11	8	4.0	3.0	0	0	2
NY 103	8	3.0	7.0	0	0	2
NY 102	8	2.5	4.0	0	0	1
Snowden	8	2.0	3.5	0	0	1
Cherry Red	8	2.5	7.0	1	0	3
NY 87	5	3.0	5.0	0	0	1
AF 1480-5	8	4.0	2.0	0	0	2
AF 1437-1	8	2.0	3.5	0	0	1
ND 1417-6	8	2.5	2.0	0	0	1
AF 1565-12	5	2.5	3.5	0	0	1
AF 1615-1	5	2.0	4.5	0	0	2
DK. R. Norland	8	3.0	6.0	0	0	2
ND 2471-8	5	2.5	4.5	0	0	1
AF 14244-7	5	3.0	4.5	0	0	1
Century Russet	9	7.0	1.5	0	0	3
Superior	5	2.5	4.0	0	0	2
AF 1433-4	5	2.5	3.5	0	0	1
BO 856-4	8	4.0	3.0	0	1	2
B1004-8	8	4.5	6.5	0	0	3

¹ See Standard NE 184 Rating System

² PC/SFA Standards

Ohio Table 3. Plant stand, percent blister, agtron readings, and additional tuber data for varieties grown at Wooster, Ohio - 1997.

Cultivar	Stand %	Chip ¹ Blister %	Agtron E-5F	Tuber Data ²		
				Skin Texture	Eye Depth	Skin Color
Atlantic	87	0	57.5	5.5	3.0	5.0
NorDonna	51	10	49.3	7.5	6.0	2.0
BO 766-3	84	0	59.0	6.5	6.5	7.0
BO 564-8	86	20	52.0	5.5	6.5	7.0
Yukon Gold	62	20	46.9	6.0	6.0	7.0
Quaggy Joe	73	0	48.1	7.0	5.5	6.5
Katahdin (std)	83	20	52.0	6.5	7.0	7.0
Kennebec	79	10	41.8	6.0	6.5	7.0
BO811-13	89	10	60.1	5.0	5.0	2.0
B 9922-11	76	10	50.2	3.5	7.0	4.5
NY 103	68	0	51.6	7.0	7.5	7.0
NY 102	84	0	56.0	6.5	5.5	7.0
Snowden	91	10	54.5	5.0	3.0	5.0
Cherry Red	89	0	41.6	7.0	7.0	2.0
NY 87	85	20	52.2	6.0	5.5	6.5
AF 1480-5	74	0	51.7	6.0	5.0	7.0
AF 1437-1	72	10	57.2	5.5	6.5	6.0
ND 2417-6	83	20	58.9	6.5	6.5	7.0
AF 1565-12	71	10	60.0	6.0	7.0	6.5
AF 1615-1	88	20	51.0	6.5	6.5	7.0
DK. R. Norland	81	10	57.3	7.0	6.0	2.0
ND 2471-8	69	0	59.5	7.0	5.5	7.0
AF 14244-7	64	0	60.8	6.5	7.0	6.5
Century Russet	88	0	50.4	5.0	7.0	5.0
Superior	87	0	52.1	5.0	5.0	6.0
AF 1433-4	81	10	60.4	6.0	5.5	6.5
BO 856-4	71	1	53.3	4.5	6.0	5.0
B 1004-8	74	0	40.6	4.0	8.0	4.0

¹ Percentage of chips that develop blisters greater than 20 mm in diameter during the frying process.

² See standard NE 184 rating system.

Ohio Table 4. 1997 Observation Trial Yield Data.

Cultivar	Stand %	Maturity Scale	Total cwt/a	US No. 1 cwt/a	US No. 1 %	B's %	Culls %
B 1240-12	92	mid	263	239	91	7	2
B 1145-2	82	early	261	201	77	18	5
B 1492-10	85	mid	196	137	70	26	4
B 1091-29	89	mid	268	228	85	12	3
B 1344-18	87	m.late	256	220	86	7	7
B 1415-7	75	v.late	228	201	88	6	6
B 1416-2	94	late	307	249	81	11	8
B 1321-21	90	v.late	240	185	77	18	5
B 1206-10	87	late	265	225	85	8	7
B 1083-51	80	m.late	286	217	76	11	13
R 19-20	83	mid	240	190	79	15	6
R 41-11	75	late	281	256	91	6	3
R 170-6	87	late	266	221	83	9	8
R 19-7	68	mid	169	145	86	5	9
CF 7523-1	87	late	398	318	80	14	6
Q 3-12	49	late	128	101	79	8	13
B 0985-1	84	late	156	108	69	25	6
B 0811-4	74	v.late	95	62	65	32	3
B 0564-9	90	late	233	198	85	11	4
B 1004-8	74	mid	201	181	90	9	1

Ohio Table 5. 1997 Observation Trial Tuber Ratings.

Cultivar	Skin ¹ Color	Skin ¹ Texture	Tuber ¹ Shape	Eye ¹ Depth	Overall ¹ Appearance
B 1240-12	7	7	2	7	8
B 1145-2	2	6	2	6	6
B 1492-10	2	5	2	5	4
B 1091-29	6	6	2	6	7
B 1344-18	7	7	2	5	7
B 1415-7	7	6	3	5	6
B 1416-2	6	6	2	6	7
B 1321-2	6	6	2	7	8
B 1206-10	5	5	2	6	7
B 1083-51	7	7	3	7	5
R 19-20	7	8	2	7	6
R 41-11	6	6	2	6	7
R 170-6	7	6	2	6	7
R 19-7	7	7	2	7	7
CF 7523-1	7	7	2	7	5
Q 3-12	6	7	2	7	5
B 0985-1	2	6	3	6	4
B 0811-4	2	6	2	5	5
B 0564-9	7	6	2	8	7
B 1004-8	5	5	3	7	6

¹ See standard NE 184 rating system.

Ohio Table 6. 1997 Observation Trial Internal Tuber Ratings

Cultivar	Specific Gravity	Chip ¹ Color	Agtron ²	Blisters ³ %	Hollow Heart ³	Internal ⁴ Brown Spot	Internal Discolor	Necrosis ⁴	Stem-end ⁴ Discolor	Vascular Discolor
B 1240-12	1.073	2.5	51.9	0	0	0	0	0	0	1
B 1145-2	1.069	4	38.7	10	0	0	0	0	0	0
B 1492-10	1.068	4	29.0	10	0	0	0	0	0	0
B 1091-29	1.079	1	57.8	0	0	0	0	1	0	0
B 1344-18	1.072	2	50.1	0	0	0	0	0	0	0
B 1415-7	1.073	2	53.7	20	0	0	0	0	0	0
B 1416-2	1.081	3	46.3	0	1	0	0	0	0	0
B 1321-22	1.082	2	53.7	20	0	0	0	0	0	0
B 1206-10	1.070	2	55.8	0	0	0	0	0	0	0
B 1083-51	1.079	3	40.3	10	0	0	0	0	0	0
R 19-20	1.076	5	23.2	0	0	0	0	0	0	0
R 41-11	1.064	2	53.3	0	0	0	0	0	0	0
R 170-6	1.066	4	25.8	10	0	0	0	0	0	0
R 19-7	1.070	3	51.8	20	0	0	0	0	0	0
CF 7523-1	1.066	2	53.9	40	0	0	0	0	0	0
Q 3-12	1.072	4	31.1	0	0	0	0	1	0	0
B 0985-1	1.066	2	54.0	10	0	0	0	0	0	0
B 0811-4	1.067	2	54.3	10	0	0	0	0	0	0
B 0564-9	1.073	3	46.4	0	0	0	0	0	0	0
B 1004-8	1.073	2	55.8	10	0	0	0	0	0	0

¹ PC/SFA Standard

² Agtron E-5F

³ Percentage of chips that develop blisters greater than 20 mm in diameter during the frying process.

⁴ Based on 10 tubers per sample (average of two replications).

Ohio Table 7: 1997 Observation trial comments on breeding lines that won't make it under Ohio conditions.

Cultivar	Stand %	Maturity Scale	Total cwt/a	Comments
B 1401-5	80	late	256	Round to slightly oval tubers, tendency for growth cracks and irregular surface. Stolons are attached.
B 1481-2	77	late	223	Round to oval shaped tubers, tendency to be somewhat flattish. Medium buff appearance. Irregular surface. Surface scab could be problem.
B 1466-12	35	m.late	535	Many misshapened tubers. Too few to evaluate.
B 1482-6	80	m.late	200	Many misshapened tubers. Too few to evaluate.
B 1394-4	100	late	221	Round to oval shaped tubers with light buff surface. Severe second growth. Surface scab.
B 1408-3	39	v.late	117	No yield. Round to slightly oval tubers. Surface scab could be problem. Tubers have irregular surface.
B 1425-9	93	late	256	Round tubers with netted appearance. Medium size tubers tend to be smooth. Larger tubers have irregular surface.
B 1066-37	88	m.early	176	Round to oval shaped tubers. Surface scab is problem. Wide range in size.
B 1398-5	85	v.late	217	Round to oval shaped tubers (some netting) with buff appearance. Surface scab is present. Poor uniformity. Field sprouting.
B 1065-64	65	mid	192	Round tuber with netted appearance, dark buff surface. Irregular surface.
B 1072-21	90	v.late	217	Round to oval shaped tubers with irregular surface and second growth.
B 1214-7	72	v.late	226	Major problems: irregular surface, poor appearance, and second growth.
B 1321-22	80	v.late	249	Round tubers with deep apical end, irregular surface, wide range in size.
B 1066-73	99	v.late	280	Fairly white surface appearance. Second growth, wide range in size.
AF 1455-20	55	late	114	Irregular shape. Severe second growth.
AF 1714-2	70	mid	174	Round to slightly oval tubers with irregular surface, surface scab, and misshapened.
AF 1753-1	82	m.early	240	No future. Round to oval tubers, no uniform shape, second growth is problem. Misshapened.
AF 1758-7	78	v.late	241	Round to oval to oblong tubers. Field sprouting. Second growth is problem.
AF 1753-2	80	late	257	Oval to oblong tubers. Some second growth and some surface scab.
AF 1775-2	72	v.late	280	Round to slightly oval tubers. Major problem is the irregular surface. Field sprouting is present.
AF 1606-8	90	mid	252	Irregular surface and second growth. Surface varies from smooth to heavy netting.
AF 1455-9	80	late	170	Round tubers, small size, stolons attached.
AF 1611-6	50	mid	54	Very low yield. "Dumbbell" shaped tubers. Irregular shape.
AF 1773-1	55	v.late	173	Tubers tend to be small. Trace of second growth. Misshapened.
AF 1753-12	83	late	269	Round to slightly oval tubers, almost oblong, with some second growth, irregular surface, misshapened. Surface in numerous tubers resembles "alligator skin."
AF 1764-9	69	mid	272	Major "rough" tubers with irregular surface.
R 41-18	74	late	245	Round to oval tubers; many have irregular surface. Tuber surface varies from smooth to netted.
R 17-2	75	m.late	156	Irregular surface, apical end tends to be deep. Surface scab is present.
R 17-20	70	late	218	Fairly uniform tubers. Tendency for tubers to have irregular surface.
R 18-4	90	mid	239	Round tubers with deep apical end. Wide range in size. Trace of misshapened tubers.
R 17-19	58	m.late	160	Small tuber size. Poor set. Inadequate sample.
R 17-7	34	late	247	Round to oval tubers. Major problems: irregular surface second growth, and surface scab.
R 17-11	79	late	203	Round to oval tubers. Surface scab could be problem.
R 18-4	90	mid	239	Wide range in size and shape. Many tubers have an irregular shape and irregular surface.
R 18-6	75	mid	200	Wide range in size and shape. Many tubers have an irregular shape and irregular surface.

Ohio Table 7: 1997 Observation trial comments on breeding lines that won't make it under Ohio conditions. (Continued)

Cultivar	Stand %	Maturity Scale	Total cwt/a	Comments
P 61-3	68	late	172	Round to slightly oval tubers. Many tubers have an irregular surface. Wide range in size.
Q 3-12	48	late	115	Round to oval shaped tubers with light to medium netting. Irregular surface.
P 73-2	63	late	146	Round to oval tubers, many with irregular shape and second growth.
BO178-34	71	late	222	Round to oval shaped tubers with buff appearance. Many tubers have irregular surface. Second growth and surface scab could be problem.
B 1004-8	89	late	269	Round to oblong tubers. Russetting--some with variable netting. Poor shape.
B 0984-3	54	mid	137	Mostly round tubers with buff appearance and light netting. Wide range in size.
B 0984-1	71	late	184	Medium red tubers. Tubers have irregular surface. The color does not appear to be scabby.
B 9922-11	96	late	218	Round to oval shaped tubers with fairly heavy russetting. Irregular surface and irregular shape are major defects.
B 0766-3	89	mid	201	Round to oval tubers with netted surface. Tends to have an irregular surface. May be scab susceptible.
B 1240-14	73	late	199	Round tuber with buff appearance and some netting. Apical end tends to be deep. Major problems: irregular surface and second growth.
BO811-13	71	late	148	Medium tuber size with medium red appearance. Tubers tend to have "rough" appearance. Second growth is present.
AZIZA	86	late	153	Round to slightly oval tubers, small size. Irregular surface. Second growth.
MIRIAN	91	late	224	Round to oval to oblong tubers. Second growth is a problem. Field sprouting is appearing. Small size.
DISCO	97	v.late	235	Round to oval tubers with light cream color. Small size. Many tubers with irregular surface.
ROMINA	84	v.late	214	Round tubers, cream colored surface. Major problems: second growth, much greening, and irregular surface.
PICASSO	67	v.late	185	Round to slightly oval tubers with cream colored surface containing some red blotches. Field sprouting is present. Second growth.
ISLAND SUNSHINE	66	v.late	144	Round tubers with cream colored surface. Small size. Much second growth. Irregular surface.

Oregon

A. Mosley, D. Hane, S. James, K. Rykbost, C. Shock, B. Charlton and E. Eldredge

Introduction

Russets, chippers, reds, and specialty varieties were compared on sandy loam in field trials at Corvallis. Area soils are typically wet through early May. Most crops are harvested in mid-September to avoid fall rains. Growing seasons are relatively short and yields are low compared to most eastern Oregon sites.

Late blight is a perennial problem in the Willamette Valley because of heavy dew and cool, overcast, humid weather. Some of the entries in the Corvallis variety trials showed decay despite a fairly rigid spray program. Late blight will decimate area potato crops in the absence of a good preventative program. Results of 1997 late blight resistance screening trials effectively illustrate this point.

The Oregon Statewide Trial is conducted on branch stations at Hermiston, Klamath Falls, Madras and Ontario and reflects most conditions encountered by Pacific Northwest growers farming east of the Cascades. Entries are typically compared in the Statewide for two years before advancement to the Tri-state Trial for two years and finally to the Western Regional Trial for two or more years.

Methods

Corvallis Performance Trials

The Statewide trial was grown using commercially acceptable methods common to the four production areas.

Corvallis production specifics included the following:

- **SEED**
Hand cut on 5/12 - 5/16
Treated with Tops 2.5D (1 lb./100 lbs. seed)
- **FIELD PREPARATION**
Moldboard plowed on 5/18
Rotera (horizontally oscillating spikes approximately 6 inches long) on 5/20
15-15-15 broadcast preplant (500 lbs./a) on 5/20
Rotera on 5/20 (incorporate)
- **PLANTING DATES**
Performance trials: 5/24
Late blight screening trial: 5/21 & 5/24 (red-skinned entries)
- **TRIAL DESCRIPTIONS**
Performance Trials: Randomized Complete Block Design (RBCD) w/ 4 reps. 34" between-row spacing, 25' single-row plots, 9" in-row seed spacing.
Late Blight Screening Trial: RCBD w/ 4 reps, 34" between-row spacing, 15' single-row plots, 9" in-row seed spacing, all plot rows bordered by R. Burbank rows
- **CULTIVATION & HILLING**
6/25 with two-row disc hillers
- **FERTILIZATION**
500 lbs./a 15-15-15-9 broadcast preplant
500 lbs./a 15-15-15-9 banded @ planting
- **PESTICIDES**
Tops 2.5D 1 lb./100 lbs. seed
Di-syston banded @ planting 2.75 lbs. a.i./a
Metribuzin 0.5 lb. a.i./a post-plant, pre-emergence on 6/2
Bravo 720 @ 1.5 pints/a on 7/18, 8/1, 8/13, 8/29, 9/9
Ridomil MZ58 @ 2lbs./a on 7/25
Diquat 1 pint/a + X-77 Spreader 8 oz./a on 9/9
- **IRRIGATION**
5/24 - 9/9: 6.0 inches
11.1 (irrigation + precipitation) from planting to vine-kill [9.5" in '96 & 12.2" in '95]

13.9 inches (irrigation + precipitation) from planting to harvest [11.2" in '96 & 17.0" in '95]

- **VINE REMOVAL**
two-row chain flailer on 9/10
- **HARVEST**
Performance Trials: 9/24-9/25
Late Blight Screening Trial: 9/25
- **WEATHER**
Growing Season
Avg. Minimum Temperature = 51.4
(49.9 in '96)
Avg. Maximum Temperature = 78.7
(80.8 in '96)
Avg. Mean Temperature = 65.0 (65.3 in '96)

Number of Days with Temperature $\geq 90^{\circ}$ F
May = 0 (0 in '96, 2 in '95)
June = 0 (1 in '96, 7 in '95)
July = 1 (12 in '96, 9 in '95)
Aug. = 9 (9 in '96, 9 in '95)
Sept. = 1 (1 in '96, 7 in '95)

Total Rainfall

From Date of Planting to Vine-kill = 5.1 inches [1.8" in '96 & 2.5" in '95]

From Date of Planting to Harvest = 7.9 inches [3.5" in '96 & 7.3" in '95]

- **MISCELLANEOUS**
Growing season temperatures were slightly cooler than during the previous 2 yrs. and temperature fluctuations were not as severe as in years past.

Late blight appeared about July 15 (slightly earlier than normal). Some parts of the field were severely affected. The disease was difficult to contain with our spray program. Some tuber decay occurred in storage, especially in Russet Norkotah, for example.

Harvesting conditions (soil moisture, temperature, etc.) were wetter than desirable.

Late blight resistance screening

Cultural methods for the late blight screening trial were basically identical to

those used for variety performance trials. However, the blight trial was planted almost a month later (June 21 and 24) to maximize canopy density late in August when late blight pressure was highest. Matrix was applied at recommended rates post-crop-emergence in an unsuccessful attempt to control weeds season-long. Russet Burbank was planted in every other row in order to provide a common border for all plots. Late blight infection was encouraged by withholding all fungicide sprays. Most plants were totally dead by mid-September.

Statewide performance trials

Statewide trials were grown using management practices common to each of the four producing areas.

RESULTS AND DISCUSSION:

Chipping trials

Nine chipping varieties and selections were compared at Corvallis. U.S. No. 1 yields ranged from 353 (AC88357-3) to 586 (ATX85404-8) cwt/acre (Table 1). Four entries outyielded Atlantic, the standard (421 cwt/a). AO91812-1, AO91812-2 and ATX85404-8 produced more than 500 cwt/ac of U.S. No. 1 potatoes. Poor grade-out significantly reduced No. 1 yields of Chipeta and NorValley. Oversize was a major concern with Chipeta which produced No. 1 tubers averaging 9.9 oz.

Chipeta was relatively susceptible to knobbiness, growth cracking, and greening (Table 2). Hollow heart was not a factor for most entries but AO91812-2 showed about 5%. ATX85404-8, A88431-14 and Atlantic

showed lower levels of 3.4, 3.3 and 1.7%, respectively. AC88357-3 produced unacceptable levels of internal necrosis with 43.4% of the tubers affected.

Specific gravities ranged from 1.081 for Chipeta to 1.089 for Atlantic, the standard, to 1.101 for A88431-1 (Table 3). A88431-1 showed exceptionally good fry color at harvest with an Agron reading of 46.0 compared to 43.7 for Atlantic and 38.8 for Chipeta. Chipeta seemed to produce darker fries than any other entry at harvest. However, a close examination of statistical significance in table 3 shows few differences in chip color.

Our 40°F cooler failed due to mechanical problems, so December data are limited to fry color from 50°F and sprout percentages and lengths. Interestingly, A88432-1 which fried extremely light at harvest was no better than most other entries on December 15. Only Chipeta tended to produce chips significantly darker than most others. Chipeta showed fewer, shorter sprouts on December 15 suggesting that it might be slightly later maturing and have a longer dormancy. ATX85404-8 appeared to have a very short dormancy as did NorValley.

Based on all factors, the two Oregon selections AO91812-1 and AO91812-2 appeared to have considerable promise, especially for long-season production areas. ATX85404-8 also performed well with the exception of long-term storage. We noted in previous tests that it sprouts early and severely.

Reds

Several red selections yielded well compared to the checks [Dark Red

Norland (444 cwt., U.S. No. 1), Red LaSoda (404 cwt), and Sangre (512 cwt/a) (Table 4)]. Notable selections included CO86218-2 (500 cwt/a), NDO4588-5R (531 cwt.), and NDO4300-1R (536 cwt/a). Both of the latter entries produced very few 2's and culls.

External defects were minimal except for 15.8% growth cracks in CO86142-3 (Table 5). CO86218-2 showed some tendency toward hollow heart with a level of 6.7% but the two high-yielding Oregon selections, NDO4588-5R and, especially, NDO4300-1R were generally resistant to both external and internal defects. Based on these data, NDO4588-5R and NDO4300-1R appear to be especially interesting among this group of entries. CO86218-2 also shows a great deal of promise because of its excellent appearance.

Specialty varieties

Characteristics and field performance of 12 mixed gourmet types are summarized in Tables 6 and 7. Because of a broad range of shapes and sizes, grading these cultivars fairly was especially difficult. Total yields may, therefore, be more interesting to the reader than U.S. No. 1 yields. Yukon Gold remained a very good choice among round, yellow-fleshed entries. German Butterball with buff skin and yellow flesh was also quite attractive. The Oregon selection AO90319-1 was promising with russeted, slightly round, yellow-fleshed tubers. NDC4069-4 was also interesting because of its red skin and flesh; however, this selection was basically eliminated by metribuzin injury. Red Gold tubers were also quite attractive.

Russets

Several Oregon selections performed well relative to Russet Burbank and Russet Norkotah (Tables 8 and 9). AO87277-6, AO88103-3 and AO91522-4 produced relatively good yields and much higher solids than Norkotah. Russet Norkotah and NDD840-1 showed a relatively high incidence of tuber decay, probably related to late-season late blight infection. AO87277-6 and AO91522-4 are probably the two most interesting selections among this group for Willamette Valley conditions. The former may hold more promise for processing because of slightly higher solids. AO88103-3 showed an unacceptably high level of hollow heart with 23.3% of the tubers affected. The two other high-yielding Oregon selections were relatively free of both external and internal defects.

Late blight screening

Twenty-seven white and russet varieties were compared for foliar and tuber resistance to late blight infection in unsprayed fields at Corvallis (Table 10). By early September, most varieties showed almost total foliar death and differences in leaf loss among the entries were minimal.

However, significant differences in late blight tuber infection were evident at harvest. Tuber infection levels ranged from 0 to more than 52%. Infection levels were even higher in similar trials in 1996. Russet Burbank showed moderate resistance to infection with only 10% of the tubers showing obvious, though relatively mild decay. Among the named varieties included, Atlantic was most resistant with only 7.5% infection

(1.3 severity rating) compared to 10% for Russet Burbank, 27.5% for Russet Norkotah, 32.5% for Chipeta and 42.5% tuber infection for Ranger Russet. Ranger Russet, Russet Norkotah, and Shepody were markedly susceptible in 1996 trials as well.

Breeding selections showing some resistance to late blight tuber decay include: A82360-7, 10% infection/1.0 severity rating; A8792-1, 2.5% infection/1.0 severity rating; A88338-1, 0 infection/0.5 severity rating; A082611-7, 2.5% infection/0.5 severity rating; and COO83008-1, 5.0% infection/0.8 severity rating. These results will be used by western breeders to produce blight-resistant populations for varietal development purposes.

Resistance of several reds to tuber infection was also evaluated at Corvallis. No differences in infection were evident (Table 11). CO86142-3 showed some tendency toward resistance.

Oregon Statewide Trial

Twelve of 19 entries in the Statewide Trial (Tables 12 and 13) were either retained for further state tests or advanced to the Tri-state and Western Regional Trials. AO900114-1, AO88103-3, AO92007-2, AO92016-3 and AO92017-6 appeared to have excellent multi-purpose potential, especially AO88108-3. The two chippers, AO91812-1 and AO91812-2, produced excellent yields and good chip color but were late maturing. These entries may have good potential for long season areas. AO90319-1 produced attractive russet-skinned, yellow-fleshed tubers which may be of interest to specialty growers.

Oregon Table 1. Yield, grade, and size distribution of 9 chipping varieties and selections at Corvallis, OR. 1997.

Variety/Selection	Yield (cwt/a)	Yield U.S. No. 1's (cwt/a)				Yield (cwt/a)		% U.S. No. 1's
	Total	Total	4-6 oz	6-10 oz	> 10 oz	< 4 oz	2's & Culls	
Atlantic	508.4	420.5	76.4	188.5	155.6	43.0	44.9	82.7
Chipeta	637.4	444.6	26.6	124.5	293.5	21.9	171.0	69.7
NorValley	588.8	417.1	121.1	200.9	95.0	132.0	39.8	70.9
AO91812-1	630.0	548.5	58.9	226.6	263.0	41.5	40.1	87.1
AO91812-2	642.9	536.8	63.1	228.3	245.5	37.3	68.8	83.5
A88431-1	527.6	395.4	77.8	200.1	117.4	75.6	56.7	74.7
A8961-14	463.7	379.2	26.4	121.3	231.5	37.8	46.8	81.9
AC88357-3	419.4	352.8	87.1	186.5	79.2	41.5	25.1	84.2
ATX85404-8	683.1	585.9	83.3	279.4	223.3	55.4	41.8	85.9
Mean	566.8	453.4	68.9	195.1	189.3	54.0	59.4	80.0
CV (%)	12.7	14.3	24.3	14.7	27.0	19.8	52.0	6.2
LSD (0.05)	105.3	94.8	24.5	41.8	74.5	15.6	45.1	7.2

¹ oz/tuber = total weight per plot / total tubers per plot; i.e. average tuber weight

Oregon Table 2. Quality characteristics and general descriptions of 9 chipping varieties and selections at Corvallis, OR. 1997.

Variety/Selection	Percent ¹						Comments
	K	GC	GR	HH	VD	IN	
Atlantic	0.1	1.0	7.3	1.7	0.0	0.0	Good skin set, Fairly uniform
Chipeta	4.1	5.7	11.8	0.0	3.4	1.7	Skinning, Too large, Ugly
NorValley	0.2	0.4	3.7	0.0	0.0	0.0	Smooth skin, Fairly uniform, Some pear shape
AO91812-1	0.2	0.6	6.3	0.0	3.4	1.7	Uniform size/shape, Minor skinning, Excellent
AO91812-2	0.8	0.7	7.1	5.0	1.7	0.0	Attached stolons, Some skinning, Good
A88431-1	0.4	1.2	7.1	3.3	5.0	0.0	Attached stolons, Some skinning, rot, Fair
A8961-14	0.7	0.7	7.1	0.0	1.7	0.0	Frequent rot, Big, Poor
AC88357-3	0.3	1.4	3.3	0.0	3.3	43.4	Good skin set, Minor shatter bruise, Uniform, Excellent
ATX85404-8	0.5	0.3	4.6	3.4	3.4	0.0	Uniform size/shape, Nice
Mean	0.8	1.3	6.5	1.5	2.4	5.2	
CV (%)	131.2	67.6	39.3	210.5	174.0	147.7	
LSD (0.05)	1.6	1.3	3.7	NS	NS	11.2	

¹ Percentage of tubers affected by: K = Knobs; GC = Growth Cracks; GR = Sunburn; HH = Hollow Heart; VD - Vascular Discoloration; IN = Internal necrosis.

Oregon Table 3. Specific gravity, fry color, and sprouting characteristics of 9 chipping varieties and selections at Corvallis, OR. 1997.

Variety/Selection	Specific	Chip Color ³	Chip Color ³	% Sprouted	Sp. Lgth. ⁴
	Gravity ¹	10/30/97	12/15/97	12/15/97	12/15/97
	10/30/97	Agtron ²	Agtron ² , 50°	50°	50°
Atlantic	1.089	43.7	40.8	21.9	0.125
Chipeta	1.081	38.8	35.8	5.8	0.075
NorValley	1.083	43.1	43.7	97.2	0.500
AO91812-1	1.091	43.7	38.0	3.6	0.150
AO91812-2	1.092	42.8	40.1	44.8	0.300
A88431-1	1.101	46.0	40.6	46.8	0.100
A8961-14	1.079	39.5	39.2	55.7	0.300
AC88357-3	1.088	40.7	42.6	20.3	0.250
ATX85404-8	1.088	42.7	40.5	90.2	0.725
Mean	1.088	42.3	40.1	42.9	0.280
CV (%)	0.3	6.7	6.4	45.7	48.1
LSD (0.05)	0.005	4.1	3.7	28.6	0.197

¹ Air/Water Method

² Agtron reflectance value (red filter), high numbers = light color

³ To determine PC/SFA value use the following formula: $PC/SFA = (-0.113 * Agtron) + 6.70984$

⁴ Expressed in inches (values ≤ 0.125 = peeping)

Oregon Table 4. Yield, grade, and size distribution of 12 red-skinned varieties and selections at Corvallis, OR. 1997.

Variety/Selection	Yield (cwt/a)	Yield U.S. No. 1's (cwt/a)				Yield (cwt/a)		% U.S. No. 1's	Spec. Grav. ¹
	Total	Total	4-6 oz	6-10 oz	> 10 oz	< 4 oz	2's & Culls		
Dk. Red Norland	597.7	443.9	68.6	210.4	164.9	74.9	78.9	74.7	1.085
Red LaSoda	525.6	404.2	37.7	152.2	214.3	41.3	80.1	76.6	1.072
Sangre	646.3	511.7	45.2	174.2	292.2	37.6	97.1	79.7	1.079
CO86142-3	478.6	304.2	63.5	171.9	68.8	74.6	99.8	62.7	1.077
CO86218-2	613.5	500.2	50.3	194.7	255.1	59.2	54.2	81.8	1.083
COO86107-1R	449.7	363.4	51.7	181.8	129.8	49.5	36.8	80.7	1.082
DT6063-1	563.2	471.3	63.0	180.7	227.5	51.9	40.1	83.4	1.084
NDO4588-5R	603.3	531.4	80.6	235.0	215.9	57.2	14.8	88.1	1.070
NDO2686-6R	519.3	415.8	91.2	241.6	83.1	99.7	3.7	79.9	1.079
NDO4300-1R	648.6	536.4	109.9	287.3	139.1	101.4	10.9	82.3	1.068
NDO2438-6R	518.4	437.4	54.2	153.7	229.5	54.7	26.3	84.3	1.061
NDO4592-3R	491.5	392.1	61.3	173.5	157.3	57.5	41.9	79.9	1.073
Mean	554.6	442.6	64.8	196.4	181.5	63.3	48.7	79.5	1.076
CV (%)	12.2	14.3	26.6	23.4	31.1	24.8	53.0	7.1	0.5
LSD (0.05)	97.1	91.4	24.8	66.1	81.1	22.6	37.2	8.1	0.008

¹ Air/water method

Oregon Table 5. Quality characteristics and appearance ratings of 12 red-skinned varieties and selections at Corvallis, OR. 1997.

Variety/Selection	Percent ¹			*Percent ²		Appearance Ratings ³			
	K	GC	GR	HH	VD	Color	Eye Depth	Shape	Skinning
Dk. Red Norland	1.5	6.0	1.6	0.0	1.7	3.6	3.4	2.0	4.5
Red LaSoda	2.3	3.6	3.3	1.7	3.4	3.3	2.8	1.7	3.9
Sangre	1.0	4.4	5.6	0.0	6.7	3.9	3.9	1.4	4.4
CO86142-3	0.0	15.8	0.9	0.0	0.0	4.5	4.4	1.1	3.6
CO86218-2	0.6	1.3	4.4	6.7	3.4	4.5	4.1	1.3	4.9
COO86107-1R	0.0	4.9	0.8	0.0	3.4	4.1	4.4	1.4	4.0
DT6063-1	0.2	1.7	3.2	6.7	1.7	4.1	4.3	1.5	4.9
NDO4588-5R	0.9	0.2	0.9	0.0	3.4	4.5	3.9	1.3	3.6
NDO2686-6R	0.2	0.2	0.3	0.0	1.7	4.0	4.9	1.1	4.4
NDO4300-1R	0.0	0.2	1.3	0.0	0.0	4.0	4.5	1.1	4.1
NDO2438-6R	0.5	0.4	3.8	0.0	5.0	4.6	4.4	1.1	4.3
NDO4592-3R	1.3	2.1	1.4	0.0	0.0	3.8	4.2	1.1	3.6
Mean	0.7	3.4	2.3	1.3	2.5	-----	-----	-----	-----
CV (%)	69.6	67.4	55.0	262.4	162.2	-----	-----	-----	-----
LSD (0.05)	0.7	3.3	1.8	4.7	NS	-----	-----	-----	-----

¹ K = Knobs; GC = Growth Cracks; GR = Sunburn

² HH = Hollow Heart; VD = Vascular Discoloration; figures based on 15 US #1 tubers per replication

*Brown Center not reported (Dk. Red Norland had 3.3%, DT6063-1 had 1.7%, remaining entries had 0%)

³ Color: 1 - pale pink; 5 - dark red Eye Depth: 1 - deep; 5 - shallow Shape: 1 - round; 2 - oval

Skinning: 1 - severe; 5 - none

Oregon Table 6. Yield, grade, and size distribution of 12 specialty-type varieties and selections at Corvallis, OR. 1997.

Variety/Selection	Yield (cwt/a)	Yield U.S. No. 1's (cwt/a)				Yield (cwt/a)		% U.S. No. 1's	Spec. Grav. ¹
	Total	Total	4-6 oz	6-10 oz	> 10 oz	< 4 oz	2's & Culls		
Desiree	539.4	238.8	64.0	120.4	54.5	94.6	206.1	44.3	1.088
Red Gold	392.2	220.8	97.1	92.7	31.1	150.0	21.4	55.4	1.087
Rosegold	437.9	239.7	35.6	109.2	95.0	69.0	129.2	52.6	1.086
LaRatte	312.1	86.2	60.4	25.8	0.0	177.1	48.9	27.2	1.079
NDC4069-4 ²	NA ²	NA ²	NA ²	NA ²	NA ²	NA ²	NA ²	NA ²	NA ²
AO90319-1	455.9	295.7	42.3	157.9	95.5	128.0	32.3	64.6	1.089
German Butterball	680.7	321.6	153.1	132.8	35.7	315.1	44.1	47.3	1.089
Pimpernel	640.4	366.3	143.8	196.0	26.6	242.6	31.5	57.0	1.108
Granola	517.6	393.9	108.6	196.2	89.3	94.0	29.7	76.1	1.074
Yukon Gold	403.1	338.6	61.2	153.9	123.5	44.4	20.2	83.9	1.089
Yellow Finn	486.0	361.1	100.5	165.4	95.2	80.3	44.7	74.1	1.087
All Blue	564.0	315.1	108.7	156.2	50.2	218.5	30.5	55.9	1.088
Mean	493.6	288.9	88.6	136.9	63.3	146.7	58.1	58.0	1.088
CV (%)	9.4	19.3	25.7	23.6	45.8	15.2	41.5	13.1	0.4
LSD (0.05)	66.8	80.5	33.0	46.7	41.9	32.2	34.8	11.0	0.007

¹ Air/water method

² Herbicide (metribuzin) injury

Oregon Table 7: Quality characteristics and general comments of 12 specialty-type varieties and selections at Corvallis, OR. 1997.

Variety/Selection	Percent ¹				Percent ²			Comments
	K	GC	GR	Scab	HH	BC	VD	
Desiree	3.1	0.1	2.0	17.9	0.0	0.0	3.4	Scab problem. Pale red skin, Lumpy. Ugly
Red Gold	0.2	1.8	1.0	0.1	0.0	1.7	1.7	Uniform size/shape, Pale red skin, Smallish. Nice
Rosegold	2.5	4.8	6.9	5.2	0.0	1.7	8.4	Rough. Scab, Lumpy, Pale red skin. Poor
LaRatte	NA ³	NA ³	NA ³	NA ³	0.0	0.0	3.4	Fingerling w/yellow flesh. Irregular shapes. Fair
NDC4069-4 ⁴	NA ⁴	NA ⁴	NA ⁴	NA ⁴	NA ⁴	NA ⁴	NA ⁴	Dark red skin/flesh, Intriguing
AO90319-1	0.0	0.7	0.5	0.0	0.0	0.0	1.7	Yellow-fleshed Russet. Slightly round. Nice
German Butterball	0.3	0.1	1.5	0.0	0.0	0.0	0.0	Buff skin w/yellow flesh, Small/Round. Nice
Pimpernel	2.1	0.2	0.2	0.2	0.0	0.0	20.0	Pale purple skin, Scaly, Tuber chaining. Poor
Granola	0.4	0.2	2.3	0.2	0.0	0.0	8.3	Buff skin w/yellow flesh, Slight russetting. Good
Yukon Gold	0.3	0.3	3.4	0.7	0.0	1.7	3.4	Smooth Buff skin w/yellow flesh. Uniform. Nice
Yellow Finn	0.5	0.2	3.9	1.1	0.0	0.0	3.4	Buff skin w/yellow flesh, Lumpy, Irreg. Shape. Fair
All Blue	0.8	0.6	0.1	0.0	0.0	0.0	0.0	Dark purple skin/flesh, Lumpy, Irreg. Shape. Fair
Mean	1.0	0.9	2.2	2.5	0.0	0.5	4.9	
CV (%)	111.7	137.9	86.1	65.9	0.0	378.7	77.6	
LSD (0.05)	1.6	1.8	2.7	2.4	NS	NS	5.4	

¹ K = Knobs; GC = Growth Cracks; GR = Sunburn

² HH = Hollow Heart, BC = Brown Center, VD = Vascular Discoloration; figures based on 15 US #1 tubers per replication

³ Not available

⁴ Herbicide Injury

Oregon Table 8. Yield, grade, and size distribution of 8 russet-type varieties and selections at Corvallis, OR. 1997.

Variety/Selection	Yield (cwt/a)	Yield U.S. No. 1's (cwt/a)				Yield (cwt/a)		% U.S. No. 1's	Spec. Grav. ¹
	Total	Total	4-6 oz	6-12 oz	> 12 oz	< 4 oz	2's & Culls		
Russet Burbank	529.7	298.2	65.7	158.7	73.8	154.4	77.2	56.2	1.091
Russet Norkotah	502.3	402.3	70.2	231.1	101.1	78.3	21.7	80.0	1.074
NDD840-1	569.1	357.0	41.8	195.0	120.2	127.3	84.8	62.9	1.087
AO87277-6	607.2	428.7	46.9	271.3	110.6	133.4	45.0	70.7	1.098
AO89128-4	545.2	313.0	68.9	197.1	47.1	180.5	51.7	57.5	1.103
AO88103-3	541.2	407.6	88.5	248.4	70.7	105.9	27.7	75.4	1.095
AO91522-4	596.7	401.1	35.9	204.1	161.2	81.1	114.6	67.1	1.087
AO90014-1	469.3	329.7	42.1	205.3	82.3	108.8	30.8	70.0	1.092
Mean	545.1	367.2	57.5	213.9	95.9	121.2	56.7	67.5	1.091
CV (%)	9.5	12.4	27.0	14.9	32.7	24.5	38.5	7.4	0.3
LSD (0.05)	76.0	66.9	22.8	46.9	46.1	43.7	32.1	7.3	0.004

¹ Air/water method

Oregon Table 9. Quality characteristics and general descriptions of 8 russet-type varieties and selections at Corvallis, OR. 1997.

Variety/Selection	Percent ¹			Percent ²			Comments
	K	GC	GR	HH	BC	VD	
Russet Burbank	2.2	0.9	1.0	1.7	1.7	0.0	Smallish. Points, Dumbbells, Lumpy. Fair
Russet Norkotah	0.0	0.2	1.4	0.0	1.7	3.4	Frequent Rot, Rough skin, Poor for Norkotah
NDD840-1	1.9	0.2	2.1	35.0	0.0	0.0	Frequent Rot, Med. Russet skin, Irregular shape, Fair
AO87277-6	0.8	0.2	1.1	5.0	0.0	0.0	Oblong, Med. Russet skin, Nice
AO89128-4	1.4	0.7	0.4	13.4	1.7	5.0	Smallish, Med. Russet skin, Good
AO88103-3	0.6	0.4	1.0	23.3	0.0	1.7	Short/Round shape, Skin slightly rough, Good
AO91522-4	3.6	1.2	4.0	0.0	0.0	1.7	Long/Blocky shape, Med. Russet skin, Excellent
AO90014-1	0.0	0.3	3.2	13.4	5.0	3.4	Oblong, Pointed bud ends, Some shatter, Good
Mean	1.3	0.5	1.7	11.5	1.3	1.9	
CV (%)	62.2	65.2	70.1	70.8	275.5	158.2	
LSD (0.05)	1.2	0.5	1.8	11.9	NS	NS	

¹ K = Knobs; GC = Growth Cracks; GR = Sunburn

² HH = Hollow Heart, BC = Brown Center, VD = Vascular Discoloration; figures based on 15 US #1 tubers per replication

Oregon Table 10. Response to late blight at Corvallis, OR. 1997.

Entry	Foliar Rating ¹	% Tuber Infect. ²	Severity Index ³
Russet Burbank	93.8	10.0	1.8
Ranger Russet	95.0	42.5	4.8
Russet Norkotah	97.5	27.5	4.8
A82360-7	96.3	10.0	1.0
A8495-1	77.5	17.5	1.8
A8792-1	96.3	2.5	1.0
A88338-1	52.0	0.0	0.5
A8836-5	86.3	35.0	4.8
AC87084-3	94.8	17.5	1.8
AO82611-7	100.0	2.5	0.5
AO87277-6	97.5	35.0	5.0
AO89128-4	100.0	35.0	6.8
CO85026-4	75.0	15.0	2.8
CO87009-4	97.5	37.5	4.8
COO83008-1	86.0	5.0	0.8
CO RN-3	96.3	17.5	3.0
CO RN-8	96.3	27.5	4.0
NDD840-1	97.5	32.5	6.0
TXAV657-27	90.0	15.0	1.8
TX1385-12	97.3	52.5	7.0
TXNS-112	100.0	37.5	6.0
TXNS-223	96.3	20.0	2.8
TXNS-278	90.0	17.5	2.3
Atlantic	90.0	7.5	1.3
Chipeta	92.5	32.5	5.3
FL-1625	93.5	12.5	2.0
FL-1851	100.0	10.0	1.8
Mean	92.0	21.3	3.2
CV (%)	9.9	63.9	77.9
LSD (0.05)	12.9	19.2	3.5

¹ 0 = 0% of leaf surface infected; 50 = 50% of leaf surface involved; 100 = 100% of leaf surface necrotic on 9/4/97

² Percent of tubers showing late blight infection based on 10 randomly selected tubers/plot

³ Decay severity rating (includes secondary infection): 1 = Healthy tubers; 10 = Uncontrollable decay

Oregon Table 11. Response of 8 red-skinned varieties and selections to late blight at Corvallis, OR. 1997.

Entry	% Tuber Infect ¹	Severity Index ²
Dk. Red Norland	45.0	8.5
Red LaSoda	55.0	10.0
Sangre	45.0	8.3
CO86142-3	17.5	4.8
CO86218-2	35.0	6.5
COO86107-1R	35.0	6.3
NDO2438-6R	37.5	7.3
NDO2686-6R	32.5	5.8
Mean	37.8	7.2
CV (%)	39.0	32.4
LSD (0.05)	NS	NS

¹Percent of tubers showing infection (based on 10 randomly selected tubers/plot)

² Decay severity rating (includes secondary infection): 1 = Healthy tubers; 10 = Uncontrollable decay

Oregon Table 12. Average performance of advanced selections and varieties at four Oregon locations, 1997 Statewide Trial¹.

Entry	Yield, cwt/a		Oz/ tuber	Lgth/ width	Spec Grav.	Fry Color ²		SE/ ³ %	Percent ⁴				
	total	No. 1				Ref.	Chart		HH	BC	BS	IBS	VD
R. Burbank	521	284	4.8	1.97	1.081	34.0	1.13	5	2	0	2	4	4
Ranger R.	528	405	7.8	1.99	1.084	38.0	0.79	1	0	0	0	1	17
Shepody	476	330	9.0	1.68	1.078	33.1	1.42	11	1	0	0	1	11
Norkotah R.	372	284	5.0	1.79	1.071	31.7	1.42	7	2	1	0	0	1
Atlantic	478	372	5.4	1.00	1.092	44.4	0.15	0	8	2	6	2	1
Umatilla R.	525	360	6.5	1.85	1.084	37.9	0.89	1	1	0	4	0	2
R. Legend	497	401	8.1	1.60	1.086	38.9	0.76	4	3	3	0	1	12
AO85165-1	501	386	7.7	1.69	1.075	28.9	1.75	8	10	0	1	2	4
AO87277-6	534	428	7.1	1.84	1.086	40.5	0.55	2	1	0	3	0	9
AO89128-4	542	357	5.6	2.14	1.092	43.5	0.49	0	1	0	1	0	6
AO90114-1	466	354	5.7	1.98	1.084	44.3	0.21	1	0	2	0	1	15
AO90319-1	446	343	5.6	1.82	1.081	27.0	2.02	6	1	0	4	0	1
AO88103-3	566	409	6.3	1.75	1.084	41.2	0.61	0	5	0	3	1	4
AO91522-4	561	415	8.3	1.87	1.080	38.3	0.86	1	1	0	4	0	5
AO91812-1	624	502	6.6	0.97	1.085	44.9	0.15	0	1	0	0	1	3
AO91812-2	652	468	5.4	1.11	1.087	43.8	0.23	0	1	0	0	0	2
AO92007-2	500	380	5.9	1.99	1.082	43.9	0.17	0	1	0	1	2	4
AO92016-2	495	344	6.8	1.81	1.076	36.0	0.92	0	1	0	4	1	11
AO92016-3	460	353	6.4	1.87	1.082	38.0	0.92	1	1	0	5	2	3
AO92017-6	523	393	8.1	1.93	1.084	38.7	0.75	2	0	0	3	1	4
AO92019-13	489	389	7.5	2.03	1.087	28.8	1.76	6	3	0	5	1	9
AO92023-3	545	437	8.0	1.72	1.078	34.3	1.07	2	1	1	5	1	4
AO92056-7	366	239	6.0	2.24	1.083	39.0	0.83	1	2	0	0	0	10
AO92173-2	584	426	7.0	1.64	1.080	31.0	1.62	9	15	0	2	0	5

¹Locations--Hermiston, Klamath Falls, Madras, Ontario

²Color: reflectance, higher numbers = lighter color; chart, lower numbers = lighter color

³Sugar-end or dark-end fries

⁴HH= hollow heart; BC = brown center; BS = blackspot bruise; IBS = internal brown spot; VD = vascular discoloration

**Oregon Table 13. Average tuber characteristics at four Oregon locations, 1997
Statewide Trial¹**

Entry	Tuber ²						Comments
	Color	Rus	Sh	ED	GC	SB	
R. Burbank	3.9	3.5	4.4	3.5	3.7	4.7	
Ranger R.	4.0	3.6	4.7	3.2	4.7	4.9	
Shepody	2.0	1.4	4.0	4.0	4.7	4.9	
Norkotah R.	4.5	4.0	4.0	4.0	5.0	4.8	
Atlantic	2.3	1.7	1.1	3.7	4.8	4.2	
Umatilla R.	3.9	3.8	4.4	3.8	4.3	4.0	
R. Legend	4.1	3.9	3.3	3.9	4.6	4.2	
AO85165-1	4.3	4.0	3.8	3.4	4.7	4.4	Advance to Regional
AO87277-6	4.1	3.9	3.9	3.7	4.8	4.2	Advance to Regional
AO89128-4	4.0	3.5	4.4	4.2	4.5	4.4	Test further
AO90114-1	3.7	3.2	4.4	4.1	4.9	3.5	Light, nice. To Tri-state
AO90319-1	4.3	4.3	4.3	4.6	5.0	3.7	Att. Rus; Yellow. Specialty
AO88103-3	4.3	4.3	3.7	4.0	4.4	3.9	Advance to Tri-state
AO91522-4	3.8	3.4	4.4	3.7	4.5	4.0	Discard
AO91812-1	2.0	1.1	1.2	3.7	4.6	4.3	Folded ends, late. Regional
AO91812-2	2.0	1.1	1.2	3.9	4.8	4.4	Good chipper. Regional
AO92007-2	4.2	4.2	4.4	3.9	5.0	4.7	Ranger type. Keep
AO92016-2	3.6	3.2	4.0	3.7	4.6	4.0	Drop
AO92016-3	3.9	3.4	4.1	4.4	4.8	3.9	Nice rus. Keep
AO92017-6	3.3	3.0	4.3	3.4	5.0	4.5	Keep
AO92019-13	4.0	3.8	4.3	4.3	4.5	4.0	Keep
AO92023-3	3.7	3.1	3.6	3.1	4.3	3.5	Drop
AO92056-7	4.2	4.0	4.7	4.1	4.3	4.6	Drop
AO92173-2	3.5	3.0	3.5	3.9	4.8	3.5	Drop

¹ Locations--Hermiston, Klamath Falls, Madras, Ontario

² Skin Color (1= red, 2 = white, 3 = buff, 4 = brown, 5 = dark brown); Russeting (1 = none, 5 = heavy); Shape (1 = round, 5 = long); Eye Depth (1 = deep; 5 = shallow); Growth Cracks (1 = severe; 5 = none); Shatter Bruise (1 = severe; 5 = none)

Pennsylvania

B.J. Christ, M.W. Peck, and D.M. Petrunak

The potato evaluation trial was conducted at the Russell E. Larson Agricultural Research Center at Rock Springs, PA. This trial is part of an extensive and on-going project that evaluates promising clones for yield and chip processing potential. Clones that are identified as excellent performers are then evaluated in regional trials across Pennsylvania.

Materials and Methods

The trial was planted on May 22 in single row plots as a randomized complete block design with three replications. Plots were 10 feet in length with 36 inches between rows and 8 inches between seed pieces. Fertilization was 300 lb/a of 0-0-62 (N-P-K) broadcast preplanting, 944 lb/A of 10-10-10 (N-P-K) in furrow at planting, and 1 application of 100 lb/A urea ammonium nitrate solution (30% N). The plots were vine killed on September 9 and 15 and harvested on October 8-10.

Specific gravity was determined by the weight-in-air/weight-in-water method. Tubers were held at ambient temperature until they were placed in storage. Samples were chipped five times throughout the winter. Four tubers from each clone were peeled, cut in half and sliced. Eight slices from the center of each half were used for the chip sample and were fried at 365 F. the chip samples were rated on a 1-10 scale according to a modified snack food color chart.

Results

The first seven weeks of the growing season were dry and minimum irrigation was supplied during those weeks. There was adequate moisture during the remainder of the season.

There were numerous lines with yield greater than Atlantic or Snowden. However, there were only a few clones with yield that had chip scores similar to Snowden: B0178-34, B1240-1, B1415-7, B1425-9, AF1426-6, AF1433-4, P32-3, P63-1, P73-2, Q8-2, R17-11, R17-20, NY102, NY115, Reba, MSA091-1, NorValley, ND2470-27, ND3647-6, and ND3828-15.

Of the reds evaluated for skin color, I426-Red, Norland, NorDonna, and ND2225-1R had the best color out of storage. However, the highest yielding

lines were Chieftain, B0811-13, B0984-1, and NorDonna. Chieftain and Norland continued to be the best reds in boiling tests.

For tablestock use, there were several lines that out yielded Katahdin or Superior: Reba, E11-45, Salem, Itasca, NY101, NY109, NY110, AF1437-1, AF1480-5, AF1615-1, AF1758-7, and B1452-18. However, only the following lines had acceptable boiling scores: Reba, E11-45, Salem, Itasca, NY101, NY109, AF1437-1, AF1758-7, and B1452-18.

Acknowledgments

The evaluation trial was funded by the Pennsylvania Potato Research Program. We acknowledge the provision of seed by Kathleen G. Haynes, USDA-Beltsville; Robert L. Plaisted, Cornell University; Alvin F. Reeves, University of Maine; Richard G. Novy, North Dakota State University; and David S. Douches, Michigan State University.

Pennsylvania Table 1. Total and >2" yield, percentage >2", specific gravity, and chip color results from potato evaluation trial in Centre County, Pennsylvania.

Cultivar	Yield (cwt/A)			Specific gravity	Chip Color				
	Total	>2"	%>2"		Nov ¹	Dec ²	Jan ³	Feb ⁴	Jan ⁵
Replicated									
Atlantic	386	352	91	1.071	4	3	4	5	6
Norchip	467	409	87	1.070	4	4	5	5	7
Snowden	426	380	89	1.074	3	3	3	3	5
Katahdin	398	380	95	1.061	5	-	-	-	-
Superior	485	461	95	1.063	-	5	7	6	7
Somerset	457	428	94	1.070	3	3	4	4	6
B0178-34	492	452	92	1.077	3	3	4	5	5
B0564-8	449	406	91	1.068	3	4	6	6	7
B0564-9	394	381	97	1.071	5	5	7	6	8
B0766-3	392	359	92	1.068	3	3	4	3	5
B0984-3	312	286	91	1.057	4	3	9	9	10
B1065-51	503	491	98	1.064	6	6	9	7	8
B1066-37	345	326	94	1.072	5	5	6	7	7
B1070-88	348	226	65	1.081	4	5	7	7	8
B1083-51	402	382	95	1.075	5	5	7	8	8
B1110-11	396	328	82	1.074	4	4	5	4	6
B1214-7	552	537	97	1.070	6	6	8	8	9
B1240-1	498	476	96	1.069	3	4	5	4	6
B1240-14	443	421	95	1.070	4	4	7	5	7
B1248-5	413	358	87	1.068	5	6	7	7	8
B1414-6	515	499	97	1.072	3	4	6	5	6
B1415-5	342	301	88	1.074	3	3	3	4	6
B1415-7	383	373	97	1.066	4	5	5	4	7
B1425-9§	474	415	87	1.081	4	4	4	4	6
B1429A-3	470	442	94	1.068	5	4	6	6	7
B1452-18	502	456	91	1.057	8	8	10	9	9
B1452-19	401	280	68	1.063	8	6	8	9	9
AF1424-6	432	424	98	1.073	3	3	4	4	5
AF1424-7	280	257	91	1.072	3	4	3	4	4
AF1433-4	376	356	95	1.065	3	3	3	5	5
AF1437-1	495	477	96	1.052	6	6	7	7	8
AF1455-20	464	439	95	1.077	4	4	5	5	6
AF1480-5	495	472	95	1.063	5	5	7	6	6
AF1565-12	383	355	93	1.065	6	7	8	7	9
AF1612-8	378	327	86	1.061	7	7	8	7	7
AF1615-1	552	515	93	1.066	6	5	7	6	8
AF1668-60	339	327	97	1.067	3	3	3	4	4
AF1668-62	336	308	91	1.066	3	3	4	5	6
AF1753-12	585	551	94	1.070	7	8	9	9	9
AF1758-5	497	472	95	1.060	5	4	7	6	7
AF1758-7	595	577	97	1.049	7	6	8	7	8
AF1764-9	406	381	94	1.062	6	6	8	9	8
AF1766-2	423	388	92	1.070	6	7	7	7	8
AF1771-2	513	497	97	1.063	6	7	8	6	8
AF1775-2	572	548	96	1.073	7	6	7	7	7
AF1856-1	448	438	98	1.065	6	6	6	5	7
AF1857-2	417	385	92	1.074	5	6	6	7	7
AF1864-36	449	391	87	1.069	5	6	8	7	8
P21-2	492	466	95	1.063	4	5	5	7	6
P32-3	388	358	92	1.074	3	5	5	4	6
P63-1	417	374	90	1.054	3	3	3	4	5
P73-2	349	305	87	1.069	4	4	4	5	6
Q3-12	431	410	95	1.068	4	5	5	6	7

Pennsylvania Table 1. Continued.

Cultivar	Yield (cwt/A)			Specific gravity	Chip Color				
	Total	>2"	%>2"		Nov ¹	Dec ²	Jan ³	Feb ⁴	Jan ⁵
Q8-2	494	475	96	1.076	3	3	4	4	5
R17-2	295	269	91	1.062	3	3	3	3	4
R17-6	558	515	92	1.061	4	4	6	5	7
R17-7	532	492	92	1.054	5	6	7	6	7
R17-11	441	422	96	1.058	3	4	6	6	7
R17-19	406	370	91	1.060	4	5	7	7	7
R17-20	455	410	90	1.066	4	3	5	4	7
R17-106	571	520	91	1.057	4	5	7	7	7
R18-4	469	422	90	1.062	4	4	4	4	6
R18-6	343	317	92	1.056	3	3	5	5	7
R19-7	354	344	97	1.057	3	5	5	5	6
R41-11	530	493	93	1.058	4	4	6	6	7
R41-18	584	552	95	1.056	4	5	5	5	7
E11-45	492	463	94	1.057	4	4	5	4	6
NY101§	581	545	94	1.064	6	5	7	6	7
NY102	463	442	96	1.071	3	4	3	4	5
NY103	335	313	94	1.060	4	4	7	7	6
NY109	399	382	96	1.055	5	6	8	7	7
NY110	445	425	96	1.064	5	4	7	5	7
NY115	402	377	94	1.063	3	3	4	4	4
Reba	488	463	95	1.063	3	3	6	5	6
Salem	613	562	91	1.057	6	7	9	9	9
MSA091-1	498	459	92	1.073	3	4	5	4	7
MSB007-1	293	234	80	1.067	6	7	8	10	7
MSB073-2	406	354	87	1.076	6	6	7	7	7
MSB076-2	437	362	82	1.084	4	4	4	6	6
N8-14	395	329	83	1.066	3	3	4	4	5
NorValley	480	412	85	1.067	3	5	3	4	6
ND2471-8	442	375	85	1.072	3	5	6	5	7
ND2470-27	493	448	91	1.065	3	4	5	5	5
ND2676-10	385	342	89	1.070	3	3	3	4	5
ND3636-1	282	228	81	1.070	4	3	4	4	5
ND3647-6	504	439	87	1.070	3	4	5	4	6
ND3828-15	489	455	93	1.065	3	4	3	4	4
Itasca	513	460	90	1.065	6	-	-	-	-
LSD (p = 0.05)	87	88	6						
Reds									
Norland	315	294	93	1.052	-	-	-	-	-
Chieftain	529	507	96	1.062	-	-	-	-	-
B0811-4	190	108	56	1.083	-	-	-	-	-
B0811-13	495	445	90	1.066	-	-	-	-	-
B0852-7	406	377	92	1.070	-	-	-	-	-
B0967-11	473	450	95	1.071	-	-	-	-	-
B0984-1	510	481	94	1.077	-	-	-	-	-
B0985-1	237	196	83	1.058	-	-	-	-	-
B1145-2	322	279	86	1.060	-	-	-	-	-
NorDonna	505	439	87	1.065	-	-	-	-	-
ND2225-1R	379	304	80	1.060	-	-	-	-	-
I426Red	412	372	90	1.070	-	-	-	-	-
LSD (p = 0.05)	86	91	8						

Pennsylvania Table 1. Continued.

Cultivar	Total	Yield (cwt/A)		Specific gravity	Chip Color				
		>2"	%>2"		Nov ¹	Dec ²	Jan ³	Feb ⁴	Jan ⁵
Nonreplicated									
B1072-21	403	393	97	1.072	5	5	6	5	6
B1088-37	421	406	96	1.059	7	7	7	6	7
B1450-10	466	326	70	1.072	8	8	8	8	9
B1452-3	375	242	65	1.076	8	6	8	7	8
B1452-9	383	308	80	1.068	7	7	8	7	8
B1452-10	320	167	52	1.071	8	6	7	7	7
B1452-16	352	296	84	1.069	8	6	9	8	8
B1452-20	352	306	87	1.063	9	8	9	8	9
B1452-21	210	191	91	1.066	9	8	9	9	10
B1452-23	404	292	72	1.065	7	5	7	7	8
B1452-25	539	444	82	1.061	10	10	10	10	10
B1452-27	340	192	56	1.060	7	7	8	10	9
AF1763-2	367	308	84	1.061	8	7	8	9	8
AF1852-3	175	120	69	1.068	5	4	7	7	7
R19-20	312	271	87	1.081	4	4	6	5	7
Long White									
B7200-23	329	295	89	1.062	7	7	9	9	9
Red									
B1102-3	210	123	58	1.072	-	-	-	-	-

Cultivar	Total	Yield (cwt/A)		Specific gravity	Chip Color				
		Mkt ⁶	% Mkt		Nov ¹	Dec ²	Jan ³	Feb ⁴	Jan ⁵
Long Whites & Russets									
Russet Norkotah	505	352	69	1.071	-	-	-	-	-
Krantz	447	285	64	1.074	-	-	-	-	-
Ranger Russet	568	252	44	1.077	-	-	-	-	-
Frontier Russet	493	261	53	1.071	-	-	-	-	-
Gold Rush Russet	512	269	52	1.065	-	-	-	-	-
Coastal Russet	415	346	82	1.064	-	-	-	-	-
Century Russet	629	405	64	1.068	-	-	-	-	-
Shepody	520	228	44	1.070	-	-	-	-	-
W1099 Russ	491	280	57	1.065	-	-	-	-	-
B0835-11	445	315	70	1.073	-	-	-	-	-
B1004-8	368	234	63	1.072	-	-	-	-	-
B1409-2	533	304	57	1.078	-	-	-	-	-
B9922-11	504	271	53	1.079	-	-	-	-	-
NY99	443	302	68	1.070	-	-	-	-	-
LSD (p = 0.05)	60	66	13						

¹ Nov. = Stored at 55 F from November 10, 1997 and chipped on November 18, 1997.

² Dec. = Stored at 55 F from November 10, 1997 and chipped on December 19, 1997.

³ Jan. = Stored at 45 F from November 13, 1997 then transferred to 55 F three weeks prior to chipping on January 28, 1998.

⁴ Feb. = Stored at 45 F from November 13, 1997 then transferred to 55 F six weeks prior to chipping on February 17, 1998.

⁵ Jan. = Stored at 45 F from November 13, 1997 and chipped on January 21, 1998.

⁶ Marketable yield = size 2-4.

Chip color is based on a 1-10 scale with 1 = lightest, 10 = darkest, 1-5 = acceptable chip color.

§ = Yellow Flesh

Texas

J. Creighton Miller, Jr. , Douglas C. Scheuring
and Jeff W. Koym

Variety Development and Testing

Seedling program. In 1997, 66,226 first year seedlings, resulting from 328 different parental combinations (crosses), were grown for selection on the Barrett Farm near Springlake. Three hundred twenty nine selections were made from this material. The seedlings grown for selection in 1997 represent a substantial increase from the number grown in 1996. The 1997 first year seedlings from Texas were produced during the fall of 1996 at College Station from true seed provided by Joe Pavék in Idaho. The remainder was obtained from Joe Pavék in Idaho (11,267), David Holm in Colorado (9,015), Kathy Haynes in Beltsville, Maryland (3,570), Al Mosley in Oregon (14,631), Rich Novy in North Dakota (16,397), and Bob Hanneman USDA-ARS, Madison, Wisconsin (612).

Adaptation trials. The 1997 growing season was abnormal in several meteorological aspects. Temperatures during the first two months of the growing season were lower than normal. Rainfall and humidity were higher than the seasonal norms. Yields were much lower than normal. The variety and advanced selection trials at Springlake were planted on March 25 and harvested on July 9 (reds) and July 29 (russets).

Fifteen russet advanced selections and the check varieties Norgold-M and Russet Norkotah were tested for their adaptability to Texas High Plains conditions (Table 1). The outstanding entries considering all factors were TX1229-2Ru, TXAV657-27Ru, A84180-8, ATX84706-2Ru,

AO85165-1, COO83008-1, TX1385-12Ru, and ATX84378-6Ru. The yields of TX1385-12Ru and ATX84378-6Ru were significantly lower than in previous years.

The red trial consisted of 17 varieties or advanced selections (Table 2). The outstanding selections were NDC4438-1 and A82705-1R (soon to be named Ida Rose). NDC4438-1 is a red fleshed selection, which produces a large number of creamer (under 4 oz.) tubers. In addition to the check varieties, Viking and Red LaSoda 10, other selections deserving mention include NDTX731-1R and NDTX4271-5R. The selections NDO4323-2 and NDO3994-2 also produced a large number of creamer size tubers. The market continues to pay a premium for small red potatoes with bright red color.

The russet strip trial consisted of 14 advanced selections for which sufficient seed was available for strip plantings of 100 foot rows (Table 3). Three Russet Norkotah strain selections and the check varieties Russet Norkotah and Norgold-M were also included. Strip trials represent a more advanced phase of testing than replicated variety trials. Four random plots of each entry were harvested. The outstanding entries based on overall performance were TXNS112, ATX1385-12Ru, TXNS223, and ATX9202-3Ru. Others deserving mention include Norgold M, ATX92002-2Ru, TX13485-12Ru, and ATX84738-6Ru. As in the past, the Texas stains continue to outperform regular Russet Norkotah.

Three red advanced selections and the check varieties Red LaSoda and Viking were also grown in a strip trial for evaluation (Table 4). The outstanding entry in this trial was DT6063-1R.

Four white and/or yellow flesh advanced selections and the check variety NorValley were also grown in a strip trial for evaluation under Texas High Plains environmental conditions (Table 5). The selections NDTX4930-5W and NorValley were the outstanding entries.

Thirteen selections, selected between 1986 and 1994, and three check varieties were also evaluated for yield and quality (Table 6). The outstanding entries based on general rating were COTX90046-5Ru, ATX90480-4W, and NDTX4930-5W.

Presented in Table 7 are trial results for 18 old European yellow flesh varieties and checks, which were grown from seed maintained in our Texas nursery. None of the entries performed better than the check varieties Yukon Gold and Saginaw Gold. Most of these varieties are late in maturity.

Texas also participated in the Russet, Chipping, Red, and Specialty Western Regional Cooperative Trials. Results from these trials are reported elsewhere in this report. Ten other trials, including a Winter Red Trial in the Lower Rio Grande Valley on the Mexican border, were also conducted and are reported in the 1997 Texas Potato Breeding Report.

Texas Table 1. Total yield, yield of U. S. No. 1, average tuber weight, specific gravity, tuber type, skin type, and general rating of 17 russet potato advanced selections or varieties grown at Springlake, Texas - 1997.

Variety or Selection	Total Yield Cwt/A	U. S. No. 1 Cwt/A		Average Tuber Weight in oz.	Specific Gravity	Tuber Type	Skin Type	General Rating ¹
		Total Yield	>10 oz.					
Norgold-M	282.2	166.6	14.1	4.1	1.060	Oblong	Russet	3.8
TX 1229-2Ru	241.9	186.1	44.3	5.5	1.069	Oblong	Russet	3.5
A81386-1	206.3	83.5	2.9	3.4	1.059	Oblong	Russet	3.5
TXAV657-27Ru	206.3	100.3	1.7	4.0	1.067	Oblong	Russet	3.8
A84180-8	200.0	100.3	0.0	3.8	1.061	Long	Russet	3.8
ATX84706-2Ru	190.3	145.6	40.1	5.4	1.065	Oblong	Russet	3.8
A82360-7	179.0	24.3	0.0	2.1	1.057	Oblong	Russet	2.8
Russet Norkotah	174.6	51.4	2.7	2.9	1.061	Oblong	Russet	3.0
CO85026-4	167.2	26.2	0.0	2.6	1.067	Oblong	Russet	2.8
A8495-1	165.1	46.8	0.0	2.8	1.068	Oblong	Russet	3.0
AO85165-1	162.6	53.1	0.0	2.8	1.053	Oblong	Russet	3.5
COO83008-1	158.4	119.0	9.4	4.5	1.062	Oblong	Russet	3.8
TX1385-12Ru	148.8	83.9	4.8	3.5	1.064	Oblong	Russet	3.5
A81473-2	144.6	55.8	1.0	3.4	1.058	Oblong	Russet	3.0
ATX84378-6Ru	124.3	70.8	16.5	4.2	1.057	Oblong	Russet	3.0
AO82611-7	124.0	34.2	0.0	2.6	1.070	Oblong	Russet	3.0
A8792-1	111.8	36.7	1.0	3.0	1.072	Oblong	Russet	2.8
Average	175.7	80.8	8.1	3.6	1.063			3.3
L.S.D. (.05)	51.5	34.1	11.6	0.5				

¹ 1 = very poor to 5 = excellent

Texas Table 2. Total yield, yield of U. S. No. 1, average tuber weight, specific gravity, tuber type, skin type, and general rating of 17 red potato advanced selections or varieties grown at Springlake, Texas - 1997.

Variety or Selection	Total Yield Cwt/A	U. S. No. 1 Cwt/A		Average Tuber Weight in oz.	Specific Gravity	Tuber Type	Skin Type	General Rating ¹
		Total Yield	>10 oz.					
Viking	194.3	153.0	37.6	4.9	1.060	Oblong	Red	3.5
Red LaSoda	165.6	94.8	3.1	3.4	1.055	Oblong	Red	3.5
NDC4438-1	165.3	59.0	0.0	2.1	1.041	Oblong	Red	4.8
A82705-1R	163.2	83.9	0.0	2.8	1.046	Oblong	Red	4.8
Red LaSoda-10	158.6	100.3	11.3	3.6	1.066	Oblong	Red	3.8
Sangre-10	135.6	70.9	0.0	2.9	1.042	Round	Red	3.8
NDO4588-5	131.3	86.9	0.0	3.5	1.044	Oblong	Red	3.3
NDTX731-1R	128.6	89.0	0.0	3.2	1.050	Round	Red	3.8
NDO4323-2	125.3	39.9	0.0	2.0	1.065	Oblong	Red	4.3
NOO5108-1	118.5	49.1	0.0	2.7	1.058	Round	Red	4.3
NDO4300-1	110.8	38.4	0.0	2.2	1.052	Oblong	Red	3.5
NDTX4271-5R	109.5	83.3	11.8	4.1	1.050	Oblong	Red	4.3
NDO3994-2	92.9	35.7	0.0	1.8	1.027	Round	Red	4.3
NDO2438-6	80.0	37.4	0.0	2.4	1.034	Oblong	Red	3.5
NDTX4304-1R	72.8	62.5	4.0	4.5	1.053	Oblong	Red	3.3
NDO4592-3	60.8	34.8	0.0	2.5	1.063	Oblong	Red	3.8
ND2225-1R	57.7	26.9	0.0	2.5	1.039	Oblong	Red	2.3
Average	121.8	67.8	4.0	3.0	1.050			3.8
L.S.D. (.05)	35.5	27.1	11.8	0.6				

¹ 1 = very poor to 5 = excellent

Texas Table 3. Total yield, yield of U. S. No. 1, average tuber weight, specific gravity, tuber type, skin type, and general rating of 20 russet potato advanced selections or varieties grown at Springlake, Texas - 1997.

Variety or Selection	Total Yield Cwt/A	U. S. No. 1 Cwt/A		Average Tuber Weight in oz.	Tuber Type	Skin Type	General Rating ¹
		Total Yield	>10 oz.				
TX 1229-2Ru	268.8	237.5	26.6	2.7	Oblong	Russet	4.0
TXNS112	242.8	155.1	4.2	2.8	Oblong	Russet	3.8
ATX84706-2Ru	236.3	218.0	56.4	2.2	Oblong	Russet	3.8
TXNS223	235.2	155.1	3.8	1.8	Oblong	Russet	3.8
Norgold-M	232.1	185.9	5.7	2.0	Oblong	Russet	4.0
ATX9202-3Ru	231.2	158.4	2.9	4.5	Oblong	Russet	4.0
ATX9202-2Ru	208.4	106.4	0.0	2.2	Oblong	Russet	3.8
CO85026-4	201.7	101.3	0.0	4.7	Oblong	Russet	3.0
TX1385-12Ru	193.5	142.3	7.5	3.2	Oblong	Russet	3.8
ATX84378-6Ru	172.3	120.2	6.3	2.2	Oblong	Russet	3.8
ATX9201-1Ru	135.1	73.9	0.0	2.1	Oblong	Russet	2.8
ATX9202-1Ru	132.0	86.4	3.4	1.4	Oblong	Russet	3.5
TXAV657-27Ru	131.3	83.1	0.8	1.4	Oblong	Russet	3.0
TXNS278	124.0	67.2	0.0	2.5	Oblong	Russet	3.8
ATX9204-2Ru	123.4	89.4	5.3	2.2	Oblong	Russet	3.0
Russet Norkotah	120.9	80.4	1.1	1.6	Oblong	Russet	2.8
ATX9289-2Ru	81.6	38.8	0.0	2.3	Oblong	Russet	2.8
ATX9201-3Ru	73.9	55.6	1.1	1.8	Oblong	Russet	3.0
ATX9328-1Ru	43.0	28.5	0.0	1.9	Oblong	Russet	1.8
ATX9312-1Ru	21.6	9.4	0.0	2.3	Oblong	Russet	1.8
Average	160.5	109.6	6.3	2.3			3.3
L.S.D. (.05)	53.6	47.6	13.0				

¹ 1 = very poor to 5 = excellent

Texas Table 4. Total yield, yield of U. S. No. 1, average tuber weight, specific gravity, tuber type, skin type, and general rating of 5 red potato advanced selections or varieties grown at Springlake, Texas - 1997.

Variety or Selection	Total Yield Cwt/A	U. S. No. 1 Cwt/A		Average Tuber Weight in oz.	Tuber Type	Skin Type	General Rating ¹
		Total Yield	>10 oz.				
DT6063-1R	219.9	146.0	1.7	3.7	Round	Red	3.8
Red LaSoda	152.3	115.2	7.8	4.4	Oblong	Red	4.0
NDTX731-1R	116.5	80.6	1.7	3.6	Round	Red	3.0
ND2225-1R	115.6	72.6	0.0	3.5	Oblong	Red	2.8
Viking	103.9	89.6	12.6	5.0	Oblong	Red	3.8
Average	141.6	100.8	9.8	4.0			3.5
L.S.D. (.05)	63.2	ns	6.5	0.5			

¹ 1 = very poor to 5 = excellent

Texas Table 5. Total yield, yield of U. S. No. 1, average tuber weight, specific gravity, tuber type, skin type, and general rating of 5 white potato advanced selections or varieties grown at Springlake, Texas - 1997.

Variety or Selection	Total Yield Cwt/A	U. S. No. 1 Cwt/A		Average Tuber Weight in oz.	Tuber Type	Skin Type	General Rating ¹
		Total Yield	10-18 oz.				
NorValley	187.2	129.7	3.2	4.1	Oblong	White	3.5
NDTX4930-5W	155.3	132.2	4.4	5.2	Oblong	White	4.5
ATX85404-8	103.0	53.1	0.0	2.9	Oblong	White	3.0
BTX1750-1W	82.3	67.8	0.0	4.0	Oblong	White	3.0
BTX1544-2W	69.5	54.8	0.0	4.7	Oblong	White	3.0
Average	119.5	87.5	1.5	4.2			3.4
L.S.D. (.05)	53.9	40.1	ns	0.7			

¹ 1 = very poor to 5 = excellent

Texas Table 6. Total yield, yield of U. S. No. 1, average tuber weight, specific gravity, tuber type, skin type, and general rating of 13 advanced selections or varieties grown at Springlake, Texas - 1997.

Variety or Selection	Total Yield Cwt/A	U. S. No. 1 Cwt/A		Average Tuber Weight in oz.	Specific Gravity	Tuber Type	Skin Type	General Rating ¹
		Total Yield	>6 oz.					
ATX9203-4Ru	262.9	141.6	28.0	3.3	1.050	Oblong	Russet	3.0
COTX90046-5Ru	242.3	194.1	64.2	4.7	1.057	Round	White	3.8
ATX9202-1Ru	234.6	115.4	24.5	3.4	1.067	Oblong	Russet	3.5
ATX90480-4W	232.9	120.4	45.7	3.3	1.064	Oblong	White	4.0
ATX9202-3Ru	228.3	164.1	51.9	3.9	1.056	Oblong	Russet	3.5
Chipeta	205.6	141.6	60.6	3.9	1.059	Oblong	White	3.5
Russet Norkotah	204.6	140.8	46.4	3.6	1.051	Oblong	Russet	3.0
NDTX4930-5W	197.9	144.4	32.3	4.1	1.058	Oblong	White	3.5
ATX91137-1Ru	175.6	128.4	45.3	4.0	1.047	Long	Russet	3.8
NDTX4304-1R	161.4	104.3	33.8	3.0	1.045	Round	Red	3.5
NDTX4828-2R	150.5	77.9	25.8	2.6	1.046	Round	Red	3.5
Red LaSoda	148.3	94.8	35.2	3.2	1.045	Round	Red	3.8
NDTX5407-1R	119.6	32.9	1.3	2.1	1.046	Round	Red	3.0
NDTX4271-5R	109.5	78.9	31.7	3.5	1.043	Oblong	Red	3.5
COTX90046-1W	94.6	62.9	14.6	3.7	1.051	Round	White	2.8
NDTX5067-2R	70.9	20.4	6.9	1.9	1.055	Round	Red	3.0
Average	177.5	110.2	34.3	3.0	1.052			3.4
L.S.D. (.05)	47.5	45.7	23.8	0.8				

¹ 1 = very poor to 5 = excellent

Texas Table 7. Total yield, yield of U. S. No. 1, average tuber weight, tuber type, skin type, and general rating of 22 yellow flesh potato varieties grown at Springlake, Texas - 1997.

Variety or Selection	U. S. No. 1 Cwt/A						
	Total Yield Cwt/A	Total Yield	4-6 oz.	Average Tuber Weight in oz.	Tuber Type	Skin Type	General Rating ¹
Fortuna	207.9	60.4	41.3	2.7	Oblong	White	2.8
Urgenta	201.0	34.4	26.7	2.8	Oblong	Pale Red	3.5
Foxton	185.7	26.0	26.0	2.2	Oblong	Pale Red	3.0
Dore	184.2	21.4	21.4	1.8	Round	White	2.8
Ottar	178.1	13.8	13.8	2.0	Oblong	Pale Red	3.0
Yukon Gold ²	170.4	116.9	43.6	4.5	Oblong	Yellow	3.8
Eerstelling	159.7	19.1	19.1	2.2	Round	White	2.5
Yukon Gold ³	154.4	118.5	14.5	4.7	Round	White	3.8
Saginaw Gold ³	133.7	72.6	48.9	3.2	Oblong	White	3.5
Ukama	131.4	44.3	42.0	2.2	Oblong	White	2.8
Eigenheimer	120.0	23.7	16.0	2.1	Oblong	White	2.5
Krasaua	115.4	19.1	10.7	1.4	Oblong	White	2.8
Primica Inta	111.6	32.1	32.1	1.4	Round	White	3.5
Carola	110.8	31.3	16.0	2.5	Oblong	White	2.5
Climax	103.2	8.4	8.4	2.2	Oblong	White	2.5
Strobrawa	102.4	9.2	9.2	1.6	Round	Red	3.0
Alpha	102.4	29.0	29.0	2.3	Oblong	White	2.5
Granola ³	97.1	18.3	18.3	1.8	Oblong	White	2.8
Rutt	71.8	12.2	12.2	1.9	Oblong	White	2.5
Yellow Finn	70.3	7.6	7.6	2.3	Round	White	2.8
Ackeregen	63.4	0.0	0.0	1.3	Oblong	White	2.5
Troll	8.4	0.0	0.0	1.4	Oblong	Pale Red	2.8
Average	126.5	32.7	20.8	2.3			2.9

¹ 1 = very poor to 5 = excellent

² Check variety from certified seed

³ Check variety from Texas seed

Virginia

S. B. Sterrett and C. P. Savage, Jr.

Introduction

Trials were conducted at the Eastern Shore Agricultural Research and Extension Center in Painter, Virginia. Promising clones were evaluated for yield, tuber quality and appearance, vine and tuber maturity, processing (chip) potential and freedom from internal and external tuber defects. To address potential marketing niches, red-skinned and russeted clones were also evaluated for suitability in this growing area.

Methods

All trials were planted on a Bojac sandy loam soil. Germplasm evaluation trials were planted on April 3 in single-row plots 25 feet in length with 3 feet between rows, and 12 inches between seedpieces within the row for all except the red trial that was planted at 8 inches within-row spacing. Transgenic evaluation trials were planted on April 8 in single row plots 35 feet in length, 12 inches between seedpieces for Superior and 15 inches for Snowden and bordered by a non-transgenic guard row between each plot. Trials were planted using a randomized complete block design with 4 replications except Snowden transgenic trial, which had 8 replications. Fertilizer (100 lbs. N, 43.7 lbs. P, and 83 lbs. K/A) was banded at planting with carbofuran (3 lb. ai/A) + imidacloprid (0.3 lbs. ai/A) banded in the furrow for Colorado potato beetle control. Nitrogen (50 lbs./A) was sidedressed on May 20. Linuron (0.5 lbs. ai/A) and metolachlor (1.5 lb. ai/A - germplasm; 2.0 lb. ai/A - transgenic trials) were applied at dragoff on April 26. Germplasm trials received 2.75" of irrigation and the transgenic trials received 4.0" in June and early July. Round-white and red-skinned trials were harvested July 8, russet trial on July 10, and transgenic on July 21. Specific gravity was determined by weight in air/weight in water method. Chip samples were held at ambient temperature and chipped 2 days after harvest.

Seasonal Observations

Cold, wet weather delayed planting by three weeks. Cool temperatures persisted through May. Reduced

rain fall in May and June is reflected in the increased percentage of external tuber defects in some clones.

Results

Round-white Trial. Marketable yield of B1321-22 and B1425-9 was significantly greater than Superior. Marketable yield of B1206-10 was significantly lower due, in part, to severe growth cracks. Specific gravity of B1425-9 was similar to Atlantic but late vine maturity, heavy stolens, and unattractive tuber appearance precludes additional testing in this growing area.

Chip Trial. Marketable yield of several clones was significantly lower than Atlantic. Improved chip color over Atlantic was recorded for B0178-34, B0766-3, B1375-14, B1428A-3 and NYP73-2. Of these, only B0178-34 and NYP73-2 had specific gravity similar to Atlantic. Incidence and severity of internal heat necrosis (IHN) was less than Atlantic except for NY112. Attractive tubers and apparent high yield potential, and freedom of tuber defects of B1240-14 and B1429A-3 warrant additional evaluations for fresh market potential.

Commercial. Marketable yield of Carlita was significantly greater than Concurrent; Obelex, and Rikea was significantly lower than Superior. Tubers of Rikea were very susceptible to IHN, more so than any other clone evaluated in 1997. Tubers of Adora and Carlita were attractive and relatively free of internal and external defects. Both of these, particularly Adora with early tuber maturity and consistent yellow flesh color, may have potential as commercial varieties in this area.

Red-Skinned Trial. Total and marketable yield of Red LaSoda and Romano were significantly greater than B0811-4, but significantly less than Dark Red Norland. However, unattractive tubers and late skin maturity of Romano will limit grower acceptance.

Russeted-Skinned Trial. Although marketable yield of B9922-11, Century, and B1004-8 was significantly greater than BelRus, the greatest percentage of tubers over 8 oz. was noted for B9922-11. Susceptibility to growth cracks was a concern for B9922-11 and, to some extent, B1004-8.

Transgenic Trial. Emergence of SPMT15-29, SPMT15-224, SPMT15-250, SPMT15-259, and SPMT15-270 were significantly slower than the non-transgenic standard at 27 days after planting (DAP). However, the final standcount was similar for all Superior entries. In the Snowden trial, plant emergence of SDMT15-24 was significantly less than SDMT15-40 at both 34 and 41 DAP. Stem count, as well as, plant vigor and crop uniformity ratings of SDMT15-24 were significantly lower than the non-transgenic standard.

Marketable yield of all transgenic Superior clones was similar to the non-transgenic standard except SPMT15-245, which was lower. However, the size distribution of only SPMT15-270 was similar to that of the Superior standard, with a greater percentage of tubers less than 2.5" diameter reported for the other transgenic Superior clones. Average total tuber weight was also lower than the standard for all transgenic Superior clones except SPMT15-29 and SPMT15-270. Similar trends were noted for six of the transgenic clones for average marketable tuber weight.

Marketable yield of SDMT15-40 was similar to the standard Snowden. Average total and marketable tuber weights were similar to all Snowden entries.

Tuber characteristics of transgenic Superior clones were similar to the standard. Heat sprouts and second growth of most Superior entries was appreciable, reflecting the rather sudden shift in the growing season from cool and wet to hot and very dry. Tuber defects appear to less of a problem for the Snowden clones.

The appearance of all transgenic Snowden clones were significantly below that of the non-transgenic standard. All transgenic Snowden were later in tuber maturity than the standard.

Ratings

Vine and tuber ratings were completed using the rating system of the U.S. Department of Agriculture regional project NE184. For vine ratings, maturity: 1 = senesced, 9 = totally green; air pollution: 1 = defoliated, 9 = no visible symptoms. For tuber ratings, shape: 1 = round, 5 = oblong, 9 = very long (cylindrical); appearance: 1 = very poor, 9 = excellent; skin maturity: 1 = totally peeled during harvest and grading, 9 = skin intact; and tuber defects: 1 = severe, 9 = none. Ratings of heat necrosis were made on 20 tubers in the size range 2½" to 3¼".

Acknowledgments.

We thank Wise Foods, Inc., Berwick, Pennsylvania for their assistance in these evaluations and chip color determinations. We gratefully acknowledge provision of seed by Kathleen G. Haynes, USDA-Beltsville; Robert L. Plaisted, Cornell University; and Alvin F. Reeves, University of Maine. The support of this project by Can AGRICO Potato Corp., Grand Falls, New Brunswick; Global Agri Services, Inc., Fredericton, New Brunswick; and Hettema, Fredericton, New Brunswick is greatly appreciated.

Virginia Table 1. Yield, marketable yield, percentage of yield by grade size distributions, specific gravity, and chip color of advanced round-white trial grown for 95 days at Painter, Virginia, 1997.

Clone ¹	Yield >1½" cwt/A	Marketable Yield		Size Distribution (%)	Size Distribution ² by class (%)				Specific Gravity ³	Chip Color ⁴		
		cwt/A	Percentage of std.		>1.88"	>2.5"	1	2			3	4
Atlantic	256	220	98	86	72	13	14	59	13	1.087	4	
Superior (std)	255	224	100	88	74	9	14	61	12	1.075	-	
AF1569-2	270	233	104	86	74	13	12	53	21	1.071	4	
AF1763-2	272	207	92	76	56	17	20	53	3	1.063	6	
AF1769-9	248	213	95	86	66	14	20	56	10	1.076	-	
B1065-51	297	240	107	81	61	14	20	57	5	1.073	4	
B1206-10	255	197	88	77	69	10	9	51	17	1.075	-	
B1321-22	313	252	113	80	56	17	21	51	5	1.078	4	
B1425-9	319	257	115	80	64	18	17	53	10	1.088	-	
B1429A-6	247	201	90	81	62	18	20	60	2	1.073	5	
Waller-												
Duncan	27	27										
(K=100; P=0.05)												

¹ Planted April 3, harvested July 7, 1997.

² Size Distribution 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25".

³ Determined by weight in air/weight in water method.

⁴ Unreplicated samples: 1-4 = acceptable, 5 = marginal, 6 or greater = unacceptable, chipped 2 days after harvest.

Virginia Table 2. Yield, marketable yield, percentage of yield by grade size distributions, specific gravity, and chip color of chip trial grown for 95 days at Painter, Virginia, 1997.

Clone ¹	Yield		Marketable Yield		Size Distribution		Size Distribution ²				Specific Gravity ³	Chip Color ⁴
	>1½"	cwt/A	cwt/A	Percentage of std.	>1.88"	>2.5"	1	2	3	4		
Atlantic (std)	268	229		100	86	73	14	13	61	13	1.086	4
B0178-34	271	227		99	84	67	16	16	62	5	1.086	3
Superior	245	214		93	88	71	13	12	53	6	1.073	4
B0564-9	271	241		105	89	79	11	10	46	34	1.076	4
B0766-3	274	234		102	85	68	14	17	59	9	1.073	3
B1240-1	256	243		106	95	88	4	7	61	27	1.072	5
B1240-14	235	207		90	88	73	11	16	63	9	1.082	5
B1321-21	234	184		80	79	61	18	18	51	10	1.076	5
B1342-21	239	206		90	86	72	13	14	57	15	1.071	-
B1375-14	232	188		82	81	60	17	21	54	6	1.077	3
B1415-5	207	167		73	81	58	18	23	54	4	1.077	4
B1416-2	242	189		83	78	65	15	13	57	8	1.074	5
B1429A-3	309	251		110	81	55	18	27	54	1	1.077	2
NY112	246	213		93	86	72	12	14	60	12	1.074	6
NY115	218	178		78	82	62	16	20	54	9	1.074	4
NYP32-3	245	202		88	83	65	15	17	58	15	1.078	5
NYP63-1	231	188		82	82	65	17	17	53	12	1.078	5
NYP73-2	236	192		84	81	57	17	24	54	17	1.085	3
Waller-Duncan												
(K=100;	28	26										
P=0.05)												

¹ Planted April 3, harvested July 7, 1997.

² Size Distribution 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25".

³ Determined by weight in air/weight in water method.

⁴ Unreplicated samples: 1-4 = acceptable, 5 = marginal, 6 or greater = unacceptable, chipped 2 days after harvest.

Virginia Table 3. Yield, marketable yield, percentage of yield by grade size distributions, specific gravity, and chip color of commercial trial grown for 96 days at Painter, Virginia, 1997.

Clone ¹	Yield >1½" cwt/A	Marketable Yield		Percentage of std.	Size Distribution (%)		Size Distribution ² by class (%)				Specific Gravity ³
		cwt/A	%		>1.88"	>2.5"	1	2	3	4	
Adora	265	226	98	85	73	12	13	60	13	1.054	
Atlantic	249	221	96	89	77	10	13	54	22	1.083	
Carlita	310	269	117	84	73	14	12	47	26	1.054	
Concurrent	315	198	86	63	47	15	16	43	4	1.066	
Morning Gold	272	221	96	81	66	17	15	54	12	1.068	
Obelix	252	167	73	66	50	20	15	45	6	1.061	
Penta	242	204	89	84	74	13	11	49	25	1.059	
Rikea	264	152	66	58	32	30	25	31	2	1.064	
Superior (std)	263	230	100	87	76	11	14	60	23	1.074	
Symfonia	118	84	36	70	51	25	20	40	11	1.070	
Waller-Duncan (K=100; P=0.05)	34	31									

¹ Planted April 3, harvested July 7, 1997.

² Size Distribution 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25".

³ Determined by weight in air/weight in water method.

Virginia Table 4. Yield, marketable yield, percentage of yield by grade size distributions, specific gravity, and chip color of red-skinned and russet-skinned trials grown for 96 and 98 days, respectively, at Painter, Virginia, 1997.

Clone ¹	Yield >1½" cwt/A	Marketable Yield		Size Distribution			Size Distribution ²					Specific Gravity ³
		cwt/A	Percentage of std.	Size Distribution (%)			by class (%)					
				>1.88"	>2.5"		1	2	3	4	5	
Chieftan	284	248	139	87	70	13	17	59	11	-	1.063	
Dark Red			Red/purple-skinned trial									
Norland (std)	256	179	100	70	16	31	29	38	2	-	1.059	
Island Sunset	225	157	88	70	47	30	22	42	4	-	1.063	
Red LaSoda	316	247	137	78	65	22	14	53	12	-	1.061	
Romano	286	250	140	88	70	13	18	55	15	-	1.063	
B0811-4	123	37	21	30	9	70	21	9	0	-	1.081	
B0811-13	242	180	101	75	51	26	23	46	5	-	1.070	
B0852-7	242	199	111	83	63	18	19	55	9	-	1.070	
Waller-Duncan (K=100; P=0.05)	27	29										
			Russet-skinned trial									
B9922-11	221	186	159	84	39	16	44	28	10	2	1.076	
BelRus (std)	221	117	100	53	5	47	48	5	0	0	1.077	
Century	294	211	180	72	19	28	53	14	4	0	1.070	
B1004-8	230	181	155	78	19	22	60	16	3	0	1.072	
B1401-5	156	113	97	72	27	28	46	24	2	1	1.078	
Waller-Duncan (K=100; P=0.05)	37	36										

¹ Planted April 3, harvested July 8 and 10, 1997, for red-skinned and russeted-skinned trials, respectively.

² Size Distribution 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25" for red-skinned trial; 1 = <4 oz.; 2 = 4-8 oz.; 3 = 8-12 oz.; 4 = 12-16 oz.; 5 = > 16 oz. for russeted-skinned trials.

³ Determined by weight in air/weight in water method.

Virginia Table 5. Plant and tuber characteristics and tuber defects for round-white, red-skinned, and russet-skinned clones grown at Painter, Virginia, 1997.

Clone	Vine ¹			Tuber			Tuber Defects ²					Heat Necrosis	
	Size	Matur.	Air Pollution	Shape	Appear.	Skin Matur.	Percentage (by wt.)	Heat Sprouts	Sunburn	Second Growth	Crack	Tubers	Rating
Atlantic Superior	7	8	9	2	7	5	1	9	8	9	9	2	7
AF1569-2	5	6	9	3	6	7	3	9	8	8	9	0	9
AF1763-2	6	7	8	3	7	5	1	9	9	8	9	0	9
AF1769-9	6	6	7	4	6	7	6	7	8	6	9	0	9
B1065-51	5	6	7	3	6	5	1	9	9	9	9	0	9
B1206-10	6	7	9	3	5	5	6	9	9	5	9	0	9
B1321-22	6	7	9	3	5	4	13	9	8	9	2	1	8
B1425-9	7	8	9	2	7	6	3	9	9	9	9	0	9
B1429A-6	8	8	9	3	5	7	1	9	9	9	9	0	9
	6	7	9	2	7	6	1	9	9	9	9	0	9
Chip Trial													
Atlantic B0178-34	7	8	9	2	6	6	0	9	9	9	9	2	6
Superior B0564-9	6	9	9	2	6	5	1	9	8	9	9	0	9
B0766-3	5	7	9	3	6	8	1	9	9	9	9	0	9
B1240-1	7	7	6	2	6	6	0	9	9	9	9	0	9
B1240-14	8	9	8	2	5	4	1	9	9	8	9	0	9
B1321-21	9	9	7	2	8	6	1	9	9	9	9	0	9
B1342-21	8	8	9	2	6	5	1	9	9	9	9	0	9
B1375-14	6	8	9	3	5	5	3	7	9	9	6	0	9
B1415-5	4	6	9	2	6	8	2	9	8	7	9	0	9
B1416-2	5	7	9	2	6	7	1	9	9	9	9	0	9
B1429A-3	6	9	9	2	7	5	7	9	9	5	9	0	9
NY112	7	7	9	2	7	6	1	9	9	9	9	0	9
NY115	7	9	9	2	6	4	1	9	7	9	9	3	6
NYP32-3	5	7	9	2	6	6	2	9	9	9	9	1	8
NYP63-1	4	7	8	3	6	5	3	9	9	9	9	1	7
NYP73-2	5	8	9	2	5	5	2	9	9	9	9	0	9
	6	8	9	2	5	5	2	9	9	9	9	0	9

Virginia Table 5. Continued.

Clone	Vine ¹			Tuber			Tuber Defects ²					Heat Necrosis	
	Size	Matur.	Air Pollution	Shape	Appear.	Skin Matur.	Percentage (by wt.)	Heat Sprouts	Sunburn	Second Growth	Growth Crack	Tubers	Rating
Adora	5	5	9	4	7	7	3	9	9	7	9	0	9
Atlantic	7	8	9	3	7	4	1	9	6	9	9	5	7
Carlita	6	9	9	2	7	5	2	9	9	9	9	0	9
Concurrent	7	7	9	3	6	5	22	9	8	9	9	0	9
Morning	8	8	9	4	3	4	2	7	6	3	9	0	9
Gold													
Obelix	9	8	9	2	6	4	14	9	9	9	9	0	9
Penta	7	7	9	3	5	6	3	5	8	5	9	3	7
Rikea	6	7	9	2	7	7	12	7	9	6	9	11	5
Superior	5	6	9	3	6	7	1	9	7	9	9	0	9
Symfonia	8	8	9	4	5	6	5	9	9	9	9	2	7
Chieftan	7	7	8	3	6	4	1	9	9	9	9	3	6
Dark Red	5	4	5	2	7	8	2	7	9	8	7	0	9
Norland													
Island	7	7	9	3	5	5	3	9	9	8	7	0	9
Sunset													
Red LaSoda	6	6	9	3	6	6	2	9	9	9	9	1	6
Romano	8	7	8	3	4	4	1	9	9	9	9	1	6
B0811-4	4	5	8	2	6	8	0	9	9	9	9	0	9
B0811-13	5	6	8	3	5	7	0	9	9	9	9	0	9
B0852-7	6	6	9	2	7	6	1	9	9	8	8	1	7
B9922-11	8	8	9	7	6	5	16	9	9	8	6	0	9
BelRus	6	7	9	7	6	7	2	9	9	9	9	0	9
Century	7	9	9	7	5	5	9	9	8	7	9	0	9
B1004-8	6	7	9	7	7	6	5	9	9	9	7	0	9
B1401-5	5	7	9	7	5	5	10	9	9	9	9	0	9

¹Vine size, maturity, and air pollution ratings taken 85, 92, and 85 days after planting respectively.²Twenty tubers sampled.

Virginia Table 6. Early and final stand counts, stem counts, plant growth, and vine characteristics of transgenic Superior and Snowden trials grown for 104 days at Painter, Virginia, 1997.

Clone	Stand count ¹ (early)	Stand count (41 DAP)	Stem count ² -----	Plant Vigor ³ (50 DAP)	Crop Uniformity ³ -----	Vine		
						Size	Maturity	Air Pollution
Superior	16.0	29.3	41.0	7.5	6.8	6.8	5.5	9.0
SPMT15-17	15.8	28.3	37.0	6.8	7.0	6.5	5.5	9.0
SPMT15-29	12.0	29.0	42.3	6.8	6.3	6.5	5.3	9.0
SPMT15-206	15.3	29.3	40.3	7.8	7.3	6.5	5.5	9.0
SPMT15-224	12.0	28.8	41.3	7.8	7.0	6.5	5.5	9.0
SPMT15-225	16.0	29.5	40.8	7.8	6.3	6.5	5.3	9.0
SPMT15-242	17.5	29.5	42.5	7.0	6.5	6.3	5.0	9.0
SPMT15-245	12.8	29.3	39.8	7.3	5.8	6.5	4.8	9.0
SPMT15-250	11.8	30.0	41.5	8.0	6.3	7.0	5.3	9.0
SPMT15-259	12.0	29.3	40.5	7.3	6.8	7.0	5.0	9.0
SPMT15-270	8.5	29.5	38.5	6.8	6.8	7.0	5.8	9.0
Waller Duncan (K=100; P=0.05)	3.4	ns	ns	ns	ns	ns	ns	ns
Snowden	17.5	21.8	39.6	6.8	6.6	7.9	8.5	7.8
SDMT15-02	14.9	20.4	37.1	5.6	6.0	7.5	8.4	8.0
SDMT15-24	13.5	20.6	32.9	5.4	5.8	7.0	8.9	8.1
SDMT15-40	18.0	22.3	39.0	6.5	6.1	7.9	8.6	7.8
Waller-Duncan (K=100; P=0.05)	2.8	1.6	4.3	0.6	0.6	0.4	ns	ns

¹ Mean number of emerged plants in 30 row foot at 27 DAP for Superior or 34 DAP for Snowden.

² Mean number of stems in 30 row foot.

³ Plant vigor: 9 = very poor; uniformity: 9 = very consistent, 1 = broken stand.

Virginia Table 7. Yield, marketable yield, percentage of yield by grade size distributions, specific gravity, and chip color of transgenic trials grown for 104 days at Painter, Virginia, 1997.

Clone ¹	Yield >1.5" cwt/A	Marketable Yield		Size Distribution ² by class (%)				Specific Gravity ³	Average weight per tuber	
		> 1.88" cwt/A	Percentage of std.	1	2	3	4		Total	Market
Superior (std)	333	314	100	6	10	56	29	1.086	0.373	0.411
SPMT15-17	314	285	91	10	14	52	23	1.086	0.330	0.380
SPMT15-29	296	266	85	12	14	56	18	1.085	0.347	0.408
SPMT15-206	298	272	87	9	14	59	18	1.084	0.329	0.374
SPMT15-224	318	285	91	11	13	61	14	1.081	0.317	0.366
SPMT15-225	298	266	85	12	17	53	18	1.085	0.295	0.335
SPMT15-242	288	252	80	14	14	57	14	1.082	0.287	0.331
SPMT15-245	231	206	66	11	15	54	20	1.088	0.328	0.371
SPMT15-250	297	254	81	16	22	55	8	1.081	0.260	0.295
SPMT15-259	322	288	92	11	16	56	17	1.081	0.292	0.329
SPMT15-270	328	300	96	9	10	49	32	1.084	0.360	0.412
Waller-Duncan (K=100; P=0.05)	79	69	---	Manova: Wilk's Lambda: P = 0.01 Pillai's Trace: P = 0.01				ns	0.031	0.039
Snowden (std)	292	262	100	10	15	56	18	1.099	0.324	0.383
SDMT15-02	258	228	87	12	12	51	24	1.099	0.320	0.398
SDMT15-24	241	210	80	13	17	55	15	1.095	0.301	0.368
SDMT15-40	279	244	93	13	13	57	18	1.100	0.314	0.390
Waller-Duncan (K=100; P=0.05)	27	25	----	Manova: Wilk's Lambda: P = 0.02 Pillai's Trace: P = 0.02				ns	ns	ns

¹ Planted April 8, harvested July 21, 1997.

² Size Distribution 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25".

³ Determined by weight in air/weight in water method.

Virginia Table 8. Tuber characteristics and tuber defects for Superior and Snowden transgenic clones grown at Painter, Virginia, 1997.

Clone	Tuber Characteristics ¹					Tuber Defects ²				
	Shape	Size	Set	Appear.	Skin Maturity	Uniformity	Percentage (by wt.)	Heat Sprouts	Second Growth	Growth Crack
Superior	3.3	7.0	7.0	7.0	6.5	6.8	4.6	8.3	7.3	8.5
SPMT15-17	3.5	6.8	7.3	6.5	6.0	7.0	8.6	8.3	6.8	9.0
SPMT15-29	3.3	5.8	6.3	6.5	6.5	6.3	6.6	8.8	7.0	8.8
SPMT15-206	3.3	6.5	7.5	7.0	6.8	7.3	4.8	8.8	7.8	8.8
SPMT15-224	3.3	6.0	7.3	7.3	5.8	7.0	4.0	7.8	7.3	9.0
SPMT15-225	3.3	5.8	7.0	6.0	6.8	6.3	8.7	8.8	6.5	9.0
SPMT15-242	3.3	5.8	6.5	6.0	6.8	6.5	11.7	9.0	6.5	9.0
SPMT15-245	3.5	6.5	5.3	6.5	6.3	5.8	9.9	8.5	6.5	8.8
SPMT15-250	3.5	5.5	7.3	6.0	5.8	6.3	13.4	7.5	5.8	9.0
SPMT15-259	3.0	5.8	7.3	6.8	5.8	6.8	5.5	9.0	7.3	9.0
SPMT15-270	3.8	6.8	6.8	6.8	5.5	6.8	6.1	8.5	7.0	8.8
Waller-Duncan (K=100; P=0.05)	ns	1.1	ns	ns	ns	ns	---	ns	ns	ns
Snowden	2.0	6.1	7.4	6.9	5.5	6.6	0.8	8.9	9.0	9.0
SDMT15-02	2.1	5.9	6.1	5.9	4.6	6.0	0.7	8.9	9.0	9.0
SDMT15-24	2.5	5.6	6.6	6.0	4.6	5.8	2.3	9.0	8.8	9.0
SDMT15-40	2.6	5.9	6.6	6.1	4.9	6.1	2.2	9.0	8.6	8.6
Waller-Duncan (K=100; P=0.05)	0.5	ns	0.7	0.6	0.6	0.6	---	ns	ns	0.3

¹Visual observations on 4 replications of Superior, 8 replications of Snowden. Shape: 1 = very round, 9 = very long. Other variables: 1 = very poor, 9 = exceptional.

²Visual ratings of heat sprouts, second growth, growth crack: 1 = excessive, 9 = none.

Wisconsin Potato Variety Trials

Horia Groza, Bryan Bowen, and Jiming Jiang.

Evaluations of the performance of the advanced selections are done within the breeding program in the fifth and sixth field generations in replicated trials at two locations and seventh and eighth field generation are in the North Central Regional Trial (NCRT).

The field trials were conducted in Rhinelander, under shorter and colder season conditions, and Hancock, under longer and warmer season conditions, on irrigated sandy soil. They were planted in a randomized block design with single row plots of 20 hills/plot and 12"x36" spacing. Planting, vine killing and harvest dates: (1) in Rhinelander - 5/8/97, 8/20/97 and 9/3/97; (2) in Hancock - 4/22/97, 8/25/97 and 9/15/97. The NCRT was conducted in Hancock under exactly the same conditions and dates as the previously mentioned Hancock trials.

The yield was graded into A size ($>1\frac{7}{8}$ " diameter), B size ($<1\frac{7}{8}$ ") and culls. The vigor at the second blooming, early blight at the beginning of August and vine maturity were scored on a 1-9 scale (1 = very weak, very susceptible or very early, respectively). Common scab and Rhizoctonia attack on tubers was scored on a 1-9 scale (1 = very susceptible). The tubers were described for shape (1=round,

5=oval, 9=long) and shape uniformity (9=very uniform). Five tubers larger than 8 oz were cut lengthwise for rating internal tuber defects (hollow heart, internal brown spot and vascular discoloration). A general preference score for tuber external and internal appearance has been used (1=undesirable, 2=acceptable, 3=good, 4=very good). The specific gravity was determined by measuring the weight in air and water and the table values are expressed as $(SG - 1) \times 1000$. The chip color was scored from 1 to 10, according to the PCII Color Chart (where 1 is the lightest and 4 is the maximum accepted), for the frying time interval until "the bubbling" stops (which measures the reducing sugars factor and eliminates the solids factor). Measurements of chip color were also done with Colorquest 45/0 (a HunterLab spectrophotometer), for lightness (L) in the range black-white, where the acceptable color values are equal or over 60. The chip color for the trials including the advanced selections was determined at reversion (a month storage at 55F) and after three month storage at 40F with and without reconditioning (two weeks at 65F). For the NCRT the chip color was measured when processed freshly harvested and after 3 month storage at 40F (without reconditioning).

Experimental Line Characteristics

MN 16180 - medium late to late, vigorous haulm, medium susceptible to early blight, resistant to scab, attractive round tubers, light skin, high set, medium size, no internal defects, good solids, good chip color, good cold chipper, ranked 2nd in the NCRT in 1997.

MN 16489 - medium late to late, vigorous haulm, medium susceptible to early blight, round oval tubers of variable size, greening, slightly pink eyes, resistant to scab, medium solids, good chip color, good cold chipper.

MN 16966 - very late, vigorous vines, medium resistant to early blight, very high yield, long tubers, offshape, lenticels, good solids, acceptable chip color when processed freshly harvested, internal brown spot incidence, medium susceptible to scab.

MSB 073-2 - medium late, medium susceptible to early blight, medium susceptible to Rhizoctonia, uniform round tubers with good netting, good chip color when processed freshly harvested, good solids.

MSB 076-2 - late, very vigorous haulm, medium resistant to early blight, medium resistant to scab (pitted type), medium susceptible to Rhizoctonia, hard vine killing, fairly uniform round tubers with good netting, very good skin set, high yield, excellent solids,

good chip color.

MSB 106-7 - medium early, medium vigorous haulm, medium susceptible to early blight, fairly resistant to scab, long blocky tubers of variable size, low solids, not acceptable fry color, susceptible to blackspot.

ND 2225-1 R - medium early to early, medium vigorous haulm, susceptible to early blight, no incidence of pitted scab in 1997, excellent red color, very attractive tubers, low incidence of vascular discoloration, medium susceptible to Rhizoctonia, ranked the first in the NCRT in 1997.

ND 2676-10 - early, less vigorous haulm, susceptible to early blight, medium resistant to scab, round smooth tubers, very high incidence of vascular discoloration, medium solids, very good chip color, a good cold chipper.

ND 3828-15 - medium early, susceptible to early blight, large round-oval tubers, growth cracks, high incidence of hollow heart, medium resistant to scab, medium low solids, good chip color, a fairly good cold chipper (except when reconditioned from 3 month storage at 40F).

W 1100 R - medium early (10 days later than Dark Red Norland), medium vine vigor, susceptible to early blight but more resistant than D.R. Norland, good yield, attractive red tubers, uniform round tuber shape, good and stable color.

W 8475 R - medium late, low vine vigor, medium susceptible to early blight, 50-70% B size tubers, high set (up to 25 tubers/hill), good red color, round tubers, no internal defects, excellent for special market ("steamers" and "creamers")

W 1151 rus - medium early (10 days later than Russet Norkotah), less vigorous haulm, medium susceptible to early blight (significantly more resistant than Russet Norkotah), fairly resistant to scab, very attractive blocky medium heavy netted tubers (Norkotah type), early tuber set, sensitive to hollow heart.

W 1313 - medium late, vigorous haulm, fairly resistant to early blight, uniform round-oval tubers, shallow eyes, netting, good skin set, medium susceptible to pitted scab, susceptible to shatter bruises, excellent solids, good chip color at reversion and after 3 month 40F storage, especially under stress inducing sandy soil conditions.

W 1348 rus - medium late, vigorous vines, Russet Burbank type, dual purpose potato, higher yield and better fry color than R. Burbank, uniform long tubers with medium dark net (some tubers with variable intensity of darkness), medium resistant to common scab and Rhizoctonia.

Standard variety characteristics.

Atlantic - medium late to late, fairly resistant to early blight, very good yield, high proportion of hollow heart, high solids, good chip color from freshly harvest but not good at reversion and after 40F storage.

Snowden - medium early, medium resistant to early blight, smaller tuber size, shallow to medium eyes, occasional growth cracks, medium low incidence of vascular discoloration, good solids, excellent chip color at reversion, after 3 and 6 month 40F storage (when reconditioned).

Norchip - medium early, medium susceptible to early blight, very resistant to scab, growth cracks and offshape tubers, medium low incidence of hollow heart and vascular discoloration, very tolerant to internal defects, good solids, good chip color.

Red Pontiac - late, fairly resistant to early blight, pale red color, big size, round tubers, growth cracks, hollow heart, very susceptible to scab.

Dark Red Norland - early, susceptible to early blight, good red color which sometimes fades in the hot sandy soils of Hancock, good yield, hollow heart incidence.

Russet Norkotah - medium early, susceptible to early blight and early dying, medium susceptible to scab, extremely attractive tubers with medium dark net.

Russet Burbank - late,
vigorous vines, fairly
resistant to early blight and
scab, light net, knobby
tubers, medium good solids,
acceptable fry color when
processed freshly harvested,
hollow heart and vascular
discoloration.

Wisconsin Table 1. Advanced Selection Trial 1, Rhinelander,
1997 (104 days).

Cultivar	Cwt/A		Vines			Tubers			Internal Def. %		
	Tot	A's	VMt	Vig	EBt	Skg	TbU	Scb	HH	VD	IBS
Atlantic	346	327	5.5	5.2	8.0	7.0	9.0	9.0	00	00	00
DRNorland	301	250	4.8	4.3	6.0	8.0	8.3	9.0	00	00	00
Goldrush	312	264	5.3	5.3	7.0	8.7	8.0	9.0	00	07	00
RBurbank	287	218	7.3	6.7	9.0	6.7	7.7	8.7	00	00	00
RNorkotah	258	192	4.7	4.7	6.7	9.0	9.0	9.0	13	00	00
Snowden	383	284	6.0	5.7	8.0	8.5	9.0	9.0	13	00	20
Superior	193	181	4.2	4.2	5.3	9.0	7.7	9.0	00	00	00
W 1519-5	321	292	5.5	5.0	7.8	8.0	8.3	9.0	33	07	00
W 1526-1	242	152	6.7	5.7	8.7	8.3	9.0	9.0	00	00	00
W 1527-3	295	246	5.8	4.7	9.0	7.8	8.0	9.0	00	00	00
W 1566-5	207	190	6.3	5.2	9.0	4.7	8.3	9.0	00	00	00
W 1568-5	275	243	5.7	5.0	8.3	4.7	8.3	8.7	07	00	00
W 1569-2	214	190	6.3	5.7	8.5	8.0	8.7	9.0	00	00	13
W 1576-7	266	255	6.8	6.8	8.7	8.0	8.3	9.0	00	00	00
W 1577-2	224	195	4.5	4.7	7.7	9.0	8.3	9.0	00	00	00
W 1583-2	259	225	6.2	5.8	8.0	5.7	8.0	9.0	07	00	00
W 1647-1	371	326	6.2	5.3	8.7	7.3	8.7	9.0	00	00	13
W 1722-1	228	156	6.0	6.3	7.7	8.0	8.0	8.0	00	00	00
W 1742-1	315	234	5.7	5.3	8.0	8.7	8.8	9.0	00	00	00
W 1754-2	286	228	5.5	5.2	9.0	8.7	8.3	9.0	00	07	00
W 1768-3	247	200	5.3	4.5	8.2	7.0	8.3	9.0	00	00	00
W 1782-8	194	160	5.7	5.7	8.3	5.7	8.7	7.7	07	00	00
W 1802-4	281	232	4.5	5.0	7.3	7.7	9.0	8.7	00	00	00
W 1806-2	216	177	5.8	5.5	8.0	6.3	8.3	9.0	00	00	00
W 1806-18	329	272	5.2	4.8	7.0	7.7	8.7	9.0	07	00	07
W 1806-25	257	236	5.8	5.5	9.0	7.7	8.3	9.0	00	00	13
W 1811-2	316	253	7.3	6.7	9.0	5.0	9.0	9.0	00	00	00
W 1816-13	270	233	5.3	5.2	8.7	5.7	8.0	9.0	00	00	00
W 1934-6	238	139	6.2	5.5	8.7	8.2	9.0	9.0	00	07	00
W 1935-3	333	270	6.2	5.2	8.3	7.5	8.7	9.0	00	00	00
W 1936-5	331	290	6.3	5.3	9.0	5.3	8.7	9.0	00	00	00
W 1936-8	211	170	6.0	4.7	8.3	7.5	8.7	9.0	00	00	00
W 1938-6	300	207	5.0	4.8	7.0	6.0	8.3	9.0	07	07	00
W 1946-2	298	235	6.0	5.0	8.0	7.7	9.0	9.0	00	00	00
W 1946-3	249	221	4.5	4.7	7.0	9.0	9.0	9.0	00	00	07
w 1864-4r	275	205	6.8	6.2	8.5	8.7	8.3	9.0	00	00	00
W 1876-1r	304	274	5.7	5.2	8.7	8.3	9.0	9.0	00	00	00
Average	275	228	5.9	5.5	8.2	7.4	8.3	8.9	04	01	02

Tot = Total yield, **A's** = A size (>1 7/8" tubers) yield; **VMt**: Vine maturity (1=early, 9=late); **Vig**: Vine vigor (1=weak, 9=vigorous); **EBt**: Early blight (1=very attacked, 9=no attack); **Skg**: Skinning (9 = no skinning); **TbU**: Tuber shape uniformity (9=very uniform); **Scb**: Scab (1=very attacked, 9=no attack); **HH**=Hollow heart; **VD**=Vascular discoloration; **IBS**=Internal Brown Spot.

Wisconsin Table 2. Advanced Selection Trial 1, Rhinelander,
1997 (104 days).

Cultivar	SpGv	Chip Color					
		Rev		3mD		3mR	
		Vis.	L	Vis.	L	Vis.	L
Atlantic	78	3.4	66.2	6.7	51.0	4.5	60.1
DRNorland	57	6.5	57.9	9.8	41.5	8.0	47.5
Goldrush	63	6.8	53.1	10.0	38.9	9.7	49.1
Rburbank	69	6.3	56.5	9.5	44.1	7.6	50.8
Rnorkotah	64	6.6	52.6	10.0	43.3	7.7	52.4
Snowden	82	3.1	68.4	4.2	61.0	2.8	69.4
Superior	70	5.3	57.2	9.8	43.4	6.4	51.9
W 1519-5	81	3.5	64.9	8.6	45.3	5.8	56.4
W 1526-1	86	3.7	67.5	7.4	50.5	5.5	57.0
W 1527-3	83	5.3	60.8	7.9	51.2	6.7	55.6
W 1566-5	75	2.0	72.7	3.7	65.0	2.9	67.3
W 1568-5	77	3.5	69.1	5.1	58.0	4.1	62.4
W 1569-2	82	2.9	70.1	3.5	63.1	3.4	66.5
W 1576-7	75	3.3	66.9	5.9	53.2	6.5	54.6
W 1577-2	75	3.0	68.6	6.0	54.2	3.9	64.7
W 1583-2	71	6.7	56.9	8.3	46.7	8.5	48.4
W 1647-1	82	3.2	67.4	5.5	56.9	4.2	63.2
W 1722-1	81	5.5	63.1	7.8	50.3	6.6	56.3
W 1742-1	76	4.3	62.4	6.8	53.3	4.7	61.2
W 1754-2	83	3.1	70.9	6.9	52.1	4.5	63.2
W 1768-3	74	3.3	68.5	6.7	51.1	5.1	59.5
W 1782-8	85	3.0	70.4	3.2	64.4	2.6	70.5
W 1802-4	84	2.4	71.3	6.2	54.2	4.7	62.4
W 1806-2	79	2.3	71.6	4.7	61.3	3.5	67.2
W 1806-18	73	3.1	68.5	4.3	51.1	3.5	61.5
W 1806-25	78	3.4	66.1	6.1	57.1	4.5	62.7
W 1811-2	79	3.1	68.9	5.5	59.4	3.1	68.8
W 1816-13	78	4.9	62.3	6.4	54.1	5.6	59.3
W 1934-6	76	3.0	68.2	4.5	59.3	3.0	70.3
W 1935-3	74	3.0	68.2	4.0	60.1	3.4	67.0
W 1936-5	67	4.0	63.0	4.9	56.0	6.3	52.0
W 1936-8	79	3.0	69.7	4.5	62.3	3.5	67.5
W 1938-6	75	3.1	67.9	4.7	59.6	4.3	63.0
W 1946-2	76	2.2	70.1	3.6	62.3	2.5	71.5
W 1946-3	74	3.1	69.6	4.0	62.8	3.0	70.5
W 1864-4rus	68	6.3	59.3	10.0	41.0	7.2	48.8
W 1876-1rus	68	4.7	64.8	8.9	45.7	7.7	49.1
Average	76	3.9	65.4	6.4	53.6	5.1	60.3

SpGv: Specific Gravity -1×1000 ;

Chip Color: **Rev** = Reversion, **3m** = 3 month storage at 40F(**D**=direct, **R** = reconditioned 14 days at 65F). **Vis**, visual scores in CPII scale (1=light, 10=dark); **L**, lightness readings with HunterLab Colorquest 45/0.

Wisconsin Table 3. Advanced Selection Trial 2, Rhinelander,
1997 (104 days).

Cultivar	Cwt/A		Vines			Tubers			Internal Def.%		
	Tot	A's	Vmt	Vig	Ebt	Skg	TbU	Scb	HH	VD	IBS
Atlantic	346	327	5.5	5.2	8.0	7.0	9.0.	9.0	00	00	00
DRNorland	301	250	4.8	4.3	6.0	8.0	8.3	9.0	00	00	00
Goldrush	180	165	5.7	5.2	7.7	7.5	8.5	9.0	00	00	13
RNorkotah	237	158	4.3	4.7	5.0	8.3	9.0	9.0	07	00	07
Rburbank	226	183	7.0	6.2	9.0	6.3	7.7	9.0	00	00	13
Snowden	315	275	5.3	5.5	7.0	9.0	9.0	9.0	00	00	00
Superior	167	141	3.3	4.3	5.3	9.0	7.7	9.0	00	00	00
W 1005rus	255	155	6.5	6.3	8.7	8.0	8.3	9.0	00	00	00
W 1099rus	295	247	5.8	5.2	8.0	8.3	9.0	9.0	00	00	00
W 1151rus	190	146	6.2	5.3	8.3	7.8	9.0	9.0	00	00	20
W 1348rus	254	142*	6.8	6.3	8.7	7.7	8.7	9.0	00	00	00
W 1350	184	111	5.3	5.0	6.0	8.7	8.7	9.0	00	00	00
W 1360	226	178	4.7	5.0	6.2	9.0	8.3	9.0	07	00	00
W 1368	299	226	5.5	6.2	8.3	8.0	9.0	9.0	00	00	00
W 1371	184	122	5.5	5.0	8.3	8.5	7.7	9.0	00	00	07
W 1374	214	195	5.7	5.0	8.2	7.0	8.5	9.0	00	00	00
W 1375	217	200	6.3	5.7	8.7	4.7	8.3	9.0	00	00	00
W 1382	185	116	5.5	5.2	6.7	5.0	7.5	9.0	00	00	00
W 1386	379	336	5.8	5.2	8.3	7.0	7.0	8.7	00	00	00
W 1390	226	208	5.0	5.5	8.0	5.5	8.0	9.0	00	00	00
W 1407	200	185	6.3	5.5	8.7	4.0	8.3	8.0	07	00	00
W 1421	210	185	6.8	5.8	9.0	7.3	8.3	9.0	00	00	07
W 1431	206	178	6.7	5.2	8.7	4.3	8.3	9.0	00	00	13
W 1443	242	178	5.8	5.7	8.7	8.3	8.0	9.0	00	00	00
W 1474	297	273	5.5	5.2	7.0	8.3	8.3	7.3	07	00	00
W 1492	273	251	5.7	4.7	8.0	7.0	8.3	8.3	00	00	00
W 1100R	316	261	5.5	5.0	8.0	7.3	9.0	9.0	00	00	07
W 1101R	261	225	7.2	6.2	8.7	5.7	8.7	8.3	00	00	07
W 1143R	198	151	4.0	4.8	5.3	8.3	6.3	9.0	00	00	00
W 1267R	222	199	7.0	6.3	8.7	6.3	7.7	8.7	00	00	00
W 1280R	300	249	5.5	5.0	8.0	7.3	9.0	9.0	00	00	00
W 8475R	214	49*	4.8	4.3	6.0	7.7	8.0	9.0	00	00	00
W 1866-2R	265	243	5.7	5.2	8.0	6.0	9.0	9.0	00	00	07
Average	245	197	5.7	5.3	7.7	7.2	8.3	8.9	01	00	03

Tot = Total yield, **A's** = A size (>1 7/8" tubers) yield; **Vmt**: Vine maturity (1=early, 9=late); **Vig**: Vine vigor (1=weak, 9=vigorous); **EBt**: Early blight (1=very attacked, 9=no attack); **Skg**: Skinning (9 = no skinning); **TbU**: Tuber shape uniformity (9=very uniform); **Scb**: Scab (1=very attacked, 9=no attack); **HH**=Hollow heart; **VD**=Vascular discoloration; **IBS**=Internal Brown Spot.

* Yield of B's (tubers without defects <1 7/8") is 109 cwt/A for W 1348 rus and 163 cwt/A for W 8475 R.

Wisconsin Table 4. Advanced Selection Trial 2, Rhinelander, 1997 (104 days).

Cultivar	SpGv	Chip Color					
		Rev		3mD		3mR	
		Vis.	L	Vis.	L	Vis.	L
Atlantic	78	3.4	66.2	6.7	51.0	4.5	60.1
DRNorland	57	6.5	57.9	9.8	41.5	8.0	47.5
Goldrush	63	7.1	49.7	9.9	38.1	7.9	48.9
Rnorkotah	66	6.6	51.7	10.0	42.3	7.0	51.8
RBurbank	67	6.7	55.3	9.8	41.4	7.7	49.5
Snowden	73	4.4	62.5	3.8	59.3	2.9	68.5
Superior	69	5.1	61.5	9.1	44.3	6.4	53.5
W 1005 rus	71	4.6	63.2	6.2	53.7	5.5	58.8
W 1099 rus	66	7.3	51.0	10.0	38.4	8.2	45.5
W 1151 rus	66	6.5	57.3	9.8	43.3	8.3	44.3
W 1348 rus	72	5.6	56.8	6.6	48.7	6.0	54.3
W 1350	77	2.6	70.5	4.1	61.8	2.9	66.6
W 1360	81	4.5	64.4	6.0	56.4	4.9	61.3
W 1368	79	5.7	60.8	5.9	56.0	4.8	59.0
W 1371	77	3.3	66.9	4.8	58.1	3.5	64.7
W 1374	78	4.4	64.1	5.1	53.5	4.8	62.8
W 1375	80	3.7	66.5	5.3	55.1	4.5	59.7
W 1382	73	5.5	58.9	7.0	51.9	4.3	60.1
W 1386	75	3.3	67.8	6.1	55.4	3.7	64.8
W 1390	72	3.8	66.9	5.6	57.2	3.5	60.1
W 1407	76	4.0	64.5	5.7	53.2	5.0	61.1
W 1421	75	3.8	66.4	5.6	58.7	4.0	63.7
W 1431	71	2.9	67.7	4.7	60.9	3.4	66.1
W 1443	71	3.5	67.1	5.9	54.2	3.7	67.5
W 1474	76	4.7	61.7	7.1	49.5	6.1	55.0
W 1492	76	3.3	68.1	5.8	56.7	5.0	61.4
W 1100	65	5.9	56.6	9.3	44.3	6.6	56.4
W 1101	67	5.1	59.7	9.7	44.9	7.9	48.8
W 1143	55	5.4	60.8	7.2	50.8	5.5	59.5
W 1267R	70	7.6	45.5	10.0	37.4	10.0	43.0
W 1280R	58	-	-	9.6	42.4	8.1	47.3
W 8475R	59	5.1	51.5	9.5	45.0	6.7	48.6
W 1866-2R	72	6.8	53.7	9.9	44.5	8.1	47.8
Average	71	4.9	60.7	7.3	50.0	5.7	56.6

SpGv: Specific Gravity -1×1000 ;

Chip Color: **Rev** = Reversion, **3m** = 3 month storage at 40F(**D**=direct, **R** = reconditioned 14 days at 65F). **Vis**, visual scores in CPII scale (1=light, 10=dark); **L**, lightness readings with HunterLab Colorquest 45/0.

Wisconsin Table 5. Advanced Selection Trial 1, Hancock, 1997 (126 days).

Cultivar	Cwt/A		Vines			Tubers				
	Tot	A's	VMt	Vig	EBt	TbS	TbU	Scb	Rh	Pref
Atlantic	436	398	4.3	5.5	6.7	1.0	9.0	9.0	9.0	2.8
DRNorland	227	204	2.3	3.8	1.7	1.0	9.0	7.8	9.0	2.0
Goldrush	388	346	4.7	4.8	3.0	7.0	8.0	9.0	9.0	1.8
Rburbank	356	296	6.3	5.8	6.7	9.0	8.0	8.7	7.0	2.0
Rnorkotah	323	279	3.7	4.7	3.7	7.0	9.0	7.8	8.0	2.3
Snowden	401	375	5.0	5.5	5.3	1.0	8.7	8.7	8.0	2.0
Superior	374	353	3.7	4.5	3.2	3.0	8.7	9.0	9.0	2.2
W 1519-5	416	371	5.0	4.7	4.3	3.7	6.8	8.7	9.0	1.2
W 1526-1	464	411	6.5	6.0	6.3	2.3	8.3	7.0	9.0	2.0
W 1527-3	331	291	5.3	5.3	4.7	1.0	8.7	8.0	9.0	2.2
W 1566-5	375	356	5.0	5.7	5.7	1.0	8.2	7.7	9.0	2.3
W 168-5	437	393	4.3	5.0	4.8	3.0	8.3	6.7	9.0	2.2
W 1569-2	364	347	5.7	6.0	5.7	1.0	9.0	9.0	9.0	3.0
W 1576-7	369	357	6.7	6.3	7.8	3.7	8.7	8.5	9.0	2.2
W 1577-2	325	283	6.5	4.7	6.5	3.0	8.0	8.5	8.0	2.0
W 1583-2	355	291	5.7	5.2	6.0	7.0	8.7	9.0	9.0	2.8
W 1647-1	476	420	5.7	6.3	6.7	3.0	7.7	7.7	9.0	1.8
W 1722-1	412	368	5.3	6.5	6.0	4.0	8.5	7.7	8.0	2.3
W 1742-1	431	386	5.0	5.7	5.8	1.0	9.0	9.0	9.0	2.7
W 1754-2	314	270	5.3	5.3	4.7	3.3	8.7	9.0	9.0	2.3
W 1768-3	415	360	5.0	5.2	5.0	4.3	7.5	8.3	9.0	1.8
W 1782-8	387	365	6.0	5.5	6.7	1.0	9.0	8.5	9.0	3.3
W 1802-4	326	189	5.0	5.0	4.3	2.7	8.0	8.5	9.0	2.0
W 1806-2	325	286	6.0	5.5	6.0	1.7	7.3	8.3	9.0	1.8
W 1806-18	371	312	4.7	5.0	4.3	2.3	7.7	8.5	9.0	1.8
W 1806-25	364	328	4.7	5.2	5.0	3.3	8.7	9.0	9.0	2.3
W 1811-2	432	403	8.7	7.3	7.7	1.0	8.3	8.3	8.0	2.7
W 1816-13	438	398	6.7	5.5	7.3	3.3	8.3	8.5	8.0	2.3
W 1934-6	307	248	6.3	5.5	6.0	1.0	8.3	9.0	8.0	2.0
W 1935-3	415	351	5.7	5.2	6.8	4.3	7.3	8.7	9.0	1.5
W 1936-5	413	367	6.0	5.2	6.0	1.7	8.7	8.7	9.0	2.3
W 1936-8	326	301	5.0	5.0	4.7	1.0	9.0	8.8	9.0	2.2
W 1938-6	398	329	5.3	5.3	4.7	4.3	7.3	8.2	9.0	1.3
W 1946-2	372	336	4.0	5.3	5.3	5.7	7.7	9.0	9.0	1.5
W 1946-3	368	338	3.3	4.7	3.7	2.3	8.5	9.0	9.0	2.2
w 1864-4r	373	338	5.0	5.7	4.3	4.3	9.0	9.0	9.0	1.5
W 1876-1r	395	357	4.7	5.5	5.8	7.7	8.3	8.0	9.0	2.0
Average	378	335	5.2	5.4	5.4	-	8.3	8.4	8.8	2.1

Tot = Total yield (cwt/A); **A's**: A tuber size (>1 7/8") yield (cwt/A); **VMt**: Vine maturity (1=early, 9=late); **Vig**: Vine vigor (1=weak, 9=vigorous); **EBt**: Early blight (9=no attack); **TbS**: Tuber shape (1=round, 5=oval, 9=long); **TbU**: Tuber shape uniformity (9=very uniform); **Scb**: Scab (9=no attack); **Rh**: Rhizoctonia (9=no attack); **Pref**: Preference (1=undesirable tubers, 2=acceptable tubers, 3=good tuber traits, 4=very good tuber traits).

Wisconsin Table 6. Advanced Selection Trial 1, Hancock,
1997 (126 days).

Cultivar	SpGv	Chip Color					
		Rev		3mD		3mR	
		Vis.	L	Vis.	L	Vis.	L
Atlantic	84	3.4	65.2	6.7	47.6	6.1	54.5
DRNorland	55	6.9	54.8	10.0	31.9	10.0	27.9
Goldrush	59	5.5	57.9	10.0	37.5	9.9	40.6
Rburbank	78	4.0	61.7	10.0	39.3	9.5	45.0
RNorkotah	65	5.6	58.0	10.0	38.0	9.9	41.1
Snowden	79	3.3	68.1	6.0	52.6	4.6	58.7
Superior	67	3.7	64.0	10.0	41.5	9.2	45.0
W 1519-5	80	3.6	63.3	8.5	44.9	7.3	47.0
W 1526-1	99	3.6	66.1	7.4	49.8	6.9	53.6
W 1527-3	87	3.8	65.7	7.5	50.3	9.1	47.6
W 1566-5	75	2.0	72.7	3.7	65.0	2.9	67.3
W 1568-5	79	2.6	74.5	3.4	61.3	5.0	61.1
W 1569-2	85	3.0	68.7	5.5	54.9	5.8	56.4
W 1576-7	73	3.8	63.5	9.1	41.6	8.1	45.0
W 1577-2	77	3.3	68.8	7.7	47.4	7.0	51.0
W 1583-2	78	4.0	64.5	9.9	39.2	9.0	44.8
W 1647-1	90	3.3	68.0	7.4	49.0	7.3	54.8
W 1722-1	85	4.1	65.3	7.6	44.1	7.1	51.7
W 1742-1	79	3.7	66.8	5.7	53.1	5.4	57.5
W 1754-2	83	3.2	69.1	7.7	47.9	8.3	48.1
W 1768-3	68	3.2	68.2	8.9	46.2	9.5	42.7
W 1782-8	89	2.8	71.1	4.1	61.4	3.1	56.7
W 1802-4	81	3.0	69.8	7.8	48.4	7.1	57.4
W 1806-2	80	3.2	69.8	8.1	36.6	6.1	53.3
W 1806-18	78	3.4	65.3	6.0	53.3	5.8	52.8
W 1806-25	84	3.2	68.9	6.9	49.7	6.6	54.7
W 1811-2	91	3.1	69.0	6.4	57.0	6.0	53.9
W 1816-13	85	4.2	64.4	7.7	49.9	7.3	51.7
W 1934-6	88	3.1	70.0	5.7	54.7	4.3	62.7
W 1935-3	84	3.0	68.3	6.2	51.8	5.5	56.2
W 1936-5	75	3.7	66.5	7.8	50.7	6.6	56.6
W 1936-8	90	2.9	70.2	6.3	51.4	6.3	56.9
W 1938-6	92	3.2	69.1	5.7	55.1	7.1	52.4
W 1946-2	76	3.0	68.7	6.9	50.0	4.8	57.9
W 1946-3	71	3.2	68.7	6.1	50.7	6.8	51.5
W 1864-4rus	67	5.1	58.4	10.0	40.2	9.7	40.2
W 1876-1rus	68	3.4	64.8	9.9	38.4	9.8	42.1
Average	79	3.6	66.4	7.4	48.1	7.0	51.3

SpGv: Specific Gravity -1 x 1000;

Chip Color: **Rev** = Reversion, **3m** = 3 month storage at 40F(**D**=direct, **R** = reconditioned 14 days at 65F). **Vis**, visual scores in CPII scale (1=light, 10=dark); **L**, lightness readings with HunterLab Colorquest 45/0.

Wisconsin Table 7. Advanced Selection Trial 2, Hancock,
1997 (126 days).

Cultivar	Cwt/A		Vines			Tubers				
	Tot	A's	VMt	Vig	EBt	TbS	TbU	Scb	Rh	Pref
Atlantic	436	398	4.3	5.5	6.7	1.0	9.0	9.0	9.0	2.8
DRNorland	227	204	2.3	3.8	1.7	1.0	9.0	7.8	9.0	2.0
Goldrush	388	346	4.7	4.8	3.0	8.7	8.0	9.0	9.0	2.5
Rnorkotah	323	279	3.7	4.7	3.7	9.0	8.0	7.8	8.0	2.5
Rburbank	323	296	6.3	5.8	6.7	8.3	8.0	8.7	7.0	2.0
Snowden	401	375	5.0	5.5	5.3	1.7	8.7	8.7	8.0	2.5
Superior	374	353	3.7	4.5	3.2	2.3	8.7	9.0	8.0	2.3
W 1005rus	402	360	7.0	6.7	7.0	9.0	7.8	9.0	9.0	2.3
W 1099rus	343	311	4.0	5.3	4.0	9.0	8.3	8.8	9.0	2.5
W 1151rus	372	343	6.7	5.5	7.3	9.0	9.0	8.3	9.0	3.0
W 1348rus	404	359	7.3	6.3	7.0	9.0	8.0	8.8	9.0	2.2
W 1350	295	235	3.7	3.7	2.3	1.7	8.3	9.0	9.0	1.0
W 1360	361	321	5.3	4.0	5.3	4.3	8.0	7.3	9.0	2.0
W 1368	413	362	4.3	5.7	5.7	1.0	9.0	8.8	8.0	2.5
W 1371	349	305	4.3	5.3	4.7	3.0	8.0	9.0	9.0	2.2
W 1374	412	379	5.0	5.2	5.0	1.0	8.7	9.0	9.0	2.5
W 1375	295	243	6.7	5.5	7.0	5.7	8.3	8.2	9.0	1.8
W 1382	308	272	5.0	5.0	5.0	6.3	8.3	9.0	9.0	1.3
W 1386	454	410	6.0	5.3	6.3	4.0	7.7	8.3	9.0	2.3
W 1390	296	249	7.3	5.0	7.7	2.3	8.3	8.7	9.0	2.3
W 1407	407	339	6.7	5.5	7.3	3.0	8.2	8.7	8.0	2.2
W 1421	335	305	6.7	5.7	7.2	2.3	8.3	9.0	8.0	2.0
W 1431	353	331	6.7	5.2	5.7	1.7	7.7	8.7	9.0	2.0
W 1443	478	419	4.7	5.8	5.7	1.0	8.8	9.0	9.0	2.8
W 1474	390	372	5.0	5.3	5.3	3.3	7.7	7.3	9.0	2.0
W 1492	411	366	6.0	4.5	6.3	5.0	7.3	7.7	9.0	2.0
W 1100R	353	311	4.7	5.3	3.7	7.3	9.0	7.3	9.0	2.3
W 1101R	495	439	8.0	6.7	6.7	2.3	8.3	8.3	9.0	2.2
W 1143R	371	335	3.7	5.5	3.7	1.0	8.7	8.8	9.0	2.5
W 1148R	479	434	6.0	5.3	5.3	1.0	9.0	9.0	9.0	2.8
W 1267R	392	345	5.7	5.7	5.8	4.7	8.0	7.8	9.0	2.0
W 1280R	347	301	4.3	4.8	4.0	2.3	8.0	8.2	9.0	2.0
W 8475R	300	227*	4.3	3.7	2.3	1.0	8.3	8.0	9.0	2.0
Average	378	331	5.3	5.2	5.3	-	8.3	8.5	8.7	2.2

Tot = Total yield, A's = A size (>1 7/8" tubers) yield; VMt: Vine maturity (1=early, 9=late); Vig: Vine vigor (1=weak, 9=vigorous); EBt: Early blight (1=very attacked, 9=no attack); Skg: Skinning (9 = no skinning); TbU: Tuber shape uniformity (9=very uniform); Scb: Scab (1=very attacked, 9=no attack); HH=Hollow heart; VD=Vascular discoloration; IBS=Internal Brown Spot.

*Yield of B's (tubers without defects <1 7/8") is 65 cwt/A for W 8475 R.

Wisconsin Table 8. Advanced Selection Trial 2, Hancock,
1997 (126 days).

Cultivar	SpGv	Chip Color					
		Rev		3mD		3mR	
		Vis.	L	Vis.	L	Vis.	L
Atlantic	84	3.4	65.2	6.7	47.6	6.1	54.5
DRNorland	55	6.9	54.8	10.0	31.9	8.0	47.5
Goldrush	58	6.4	56.0	10.0	37.1	10.0	37.3
RNorkotah	60	5.6	59.6	10.0	36.6	8.9	40.2
RBurbank	72	5.2	59.9	9.4	37.5	9.5	45.2
Snowden	78	3.3	66.7	7.5	48.1	6.2	53.2
Superior	65	4.4	62.2	10.0	35.5	9.9	37.6
W 1005 rus	74	4.4	60.0	9.5	42.5	9.0	48.1
W 1099 rus	59	5.8	59.9	10.0	32.9	10.0	32.9
W 1151 rus	61	6.2	54.0	10.0	36.4	9.6	41.3
W 1348 rus	75	4.6	62.6	7.6	46.6	8.6	47.1
W 1350	79	2.7	69.8	8.5	46.2	7.1	50.7
W 1360	81	3.0	68.5	8.1	47.1	7.4	49.0
W 1368	88	3.2	68.2	7.3	49.6	7.1	51.9
W 1371	78	3.2	68.7	7.6	45.2	6.9	50.2
W 1374	75	3.2	65.4	7.7	45.7	6.3	52.1
W 1375	79	3.9	65.3	7.2	47.1	6.7	51.3
W 1382	84	4.1	63.8	8.5	46.7	8.2	47.8
W 1386	79	3.1	68.3	5.3	54.2	7.3	52.4
W 1390	79	3.9	67.8	4.2	55.4	4.6	59.0
W 1407	73	5.1	58.4	8.7	43.3	9.7	42.7
W 1421	80	3.3	67.7	7.3	47.6	6.3	53.5
W 1431	79	3.8	66.4	5.1	53.5	4.4	60.6
W 1443	74	3.8	63.7	8.9	45.6	7.0	49.3
W 1474	79	3.3	67.6	8.5	45.2	7.4	48.3
W 1492	77	3.6	64.5	5.7	51.6	6.4	52.9
W 1100R	61	4.4	60.2	9.9	36.9	9.4	42.0
W 1101R	64	6.8	53.2	9.7	29.9	10.0	34.9
W 1143R	55	-	-	9.9	38.2	9.9	31.5
W 1148R	72	-	-	10.0	36.1	9.7	38.1
W 1267R	70	-	-	9.6	37.8	9.9	37.7
W 1280R	52	-	-	10.0	33.3	10.0	34.2
W 8475R	56	6.3	54.9	10.0	34.0	10.0	34.7
Average	71	4.4	62.9	8.4	42.5	8.1	45.7

SpGv: Specific Gravity -1 x 1000;

Chip Color: **Vis**, visual scores in CPII scale (1=light, 10=dark);
L, lightness readings with HunterLab Colorquest 45/0. **Rev** = Reversion,
3m = 3 month storage at 40F(**D**=direct, **R** = reconditioned 14 days at 65F).

Wisconsin Table 9. North Central Regional Trial, Hancock,
1997 (126 days).

Cultivar	Cwt/A		Vines				Chip Color					
							AfHvst		3mD		3mR	
	Tot	A's	VMt	Vig	EBt	SpG	Vis.	L	Vis.	L	Vis.	L
Atlantic	423	387	5.0	5.6	6.3	84	3.0	69	6.4	51	6.0	55
Snowden	441	401	5.5	5.6	6.4	75	2.8	71	5.8	52	3.2	66
Norchip	322	266	4.0	4.6	3.0	70	3.8	67	8.0	45	5.0	54
R.Pontiac	429	364	6.8	5.8	5.3	56	6.3	53	-	-	-	-
DRNorland	369	342	1.0	2.0	1.0	54	4.8	62	-	-	-	-
Rnorkotah	264	228	4.3	4.3	4.3	62	4.4	63	-	-	-	-
R.Burbank	355	289	6.3	5.1	6.5	72	4.8	60	9.6	37	8.0	46
MN 16180	378	343	5.8	5.5	5.5	76	3.2	71	4.9	54	3.0	68
MN 16489	383	332	5.5	5.9	5.0	72	3.7	68	4.3	61	3.5	66
MN 16966	473	401	8.0	6.6	7.6	79	4.2	65	5.7	52	6.0	58
MSB 073-2	395	356	5.0	5.9	5.9	81	3.7	67	9.0	42	6.8	46
MSB 076-2	423	380	6.8	6.8	6.3	85	3.2	68	4.9	56	4.4	59
MSB 106-7	394	335	5.0	5.5	4.3	62	5.6	58	-	-	-	-
ND2225-1R	295	260	2.0	2.8	1.8	54	5.4	60	-	-	-	-
ND2676-10	344	320	3.8	4.3	2.5	73	3.1	72	3.3	65	4.2	62
ND3828-15	424	357	4.3	5.1	3.4	68	2.8	71	4.4	61	5.0	55
W 1151rus	312	331	5.5	5.0	5.8	56	5.2	57	-	-	-	-
W 1313	391	359	6.3	5.4	6.5	83	3.3	71	4.1	61	3.5	63
W 1348rus	414	357	6.0	6.3	5.5	74	4.1	62	7.6	44	6.5	57
Superior	410	339	3.8	5.6	3.3	67	3.9	66	9.2	42	8.0	47
Average	382	414	5.0	5.2	4.9	70	4.0	65	6.2	51	5.2	57

Tot = Total yield, **A's** = A size (>1 7/8" tubers) yield; **VMt**: Vine maturity (1=early, 5=late); **Vig**: Vine vigor (1=weak, 5=vigorous); **EBt**: Early blight (1=very attacked, 5=no attack); **SpG**: (Specific Gravity -1) x 1000. **Chip color**: **AfHvst** = freshly after harvest; **3mD** and **3mR** = after 3 month storage at 40F, processed directly (**D**) or with reconditioning (**R**), respectively; **Vis** = visual score (CPII scale: 1=light, 10=dark), **L** = lightness values (HunterLab Colorquest).

Wisconsin Table 10. North Central Regional Trial, Hancock,
1997 (126 days).

Cultivar	External Defects %					Internal Defects %				Scb	Rk
	Gck	Ofs	Sgn	Rot	Free	HH	IBS	VD	Norm		
Atlantic	0	1	2	0	97	33	0	0	68	8.9	
Snowden	0	1	1	0	98	0	0	13	87	8.8	
Norchip	0	3	1	0	95	13	5	13	70	9.0	
R.Pontiac	2	5	1	0	92	20	5	0	75	7.5	
DRNorland	0	1	1	0	98	15	0	3	83	8.9	
Rnorkotah	0	1	0	1	98	8	0	5	88	8.4	3
R.Burbank	0	6	0	0	94	20	3	13	65	9.0	
MN 16180	0	1	1	0	98	0	0	0	100	9.0	2
MN 16489	0	2	2	0	96	5	0	3	93	8.6	
MN 16966	0	5	1	0	94	3	15	5	78	8.3	
MSB 073-2	0	0	1	0	99	3	0	3	95	8.9	
MSB 076-2	1	2	1	0	96	5	3	0	93	9.0	
MSB 106-7	3	2	2	0	93	3	13	3	83	9.0	
ND2225-1R	0	1	1	0	98	3	5	10	83	9.0	1
ND2676-10	0	1	0	0	99	0	3	40	58	9.0	5
ND3828-15	1	4	2	0	93	35	3	8	55	9.0	
W 1151rus	0	3	0	0	97	10	0	20	70	8.4	
W 1313	0	2	1	0	97	5	3	8	85	8.4	4
W 1348rus	0	4	1	0	95	5	3	8	85	9.0	
Average	0.3	2.3	1.0	0.1	96	9.8	2.9	8.1	80	8.7	

Gck: Tuber growth cracks; **Ofs:** Offshaped tubers; **Sgn:** Sun green;
Rot: Tuber rot; **Free:** Tubers free of external defects; **HH**=Hollow
heart; **VD**=Vascular discoloration; **IBS**=Internal Brown Spot; **Norm:**
Normal tubers (no internal defects); **Scb:** Scab (9=no attack); **Rk:**
Rank - the first 5 for general merits.

